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# Using Vignettes to Develop Higher-Order Thinking and Academic Achievement in Adult Learners in an Online Environment

Maria Helen Zanoni Kish

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USING VIGNETTES TO DEVELOP HIGHER ORDER THINKING AND ACADEMIC  
ACHIEVEMENT IN ADULT LEARNERS IN AN ONLINE ENVIRONMENT

by

Maria H. Z. Kish

Submitted in partial fulfillment of the requirements

for the degree

Doctor of Education

Instructional Leadership Excellence at Duquesne

School of Education

Duquesne University

May, 2004

Copyright

By

Maria H. Z. Kish

2004

## Abstract

This case study investigated the use of vignettes as a teaching strategy and learning activity of the Generative Learning Model in a hybrid online course. The Generative Learning Model, which consists of five main components: attention, motivation, knowledge, generation, and metacognition (Wittrock, 2000) was incorporated when requiring students to answer teacher-generated vignettes and to generate their own vignettes. As a result of using vignettes within the Generative Learning Model in a hybrid online course, three outcomes were anticipated: 1) enhancement of academic achievement, 2) higher order thinking, and 3) preference of the use of vignettes as compared to other teaching strategies and learning activities.

This study considered data from student work and a questionnaire collected from the Instructional Techniques Course, GITED 631, taught in the Graduate School of Education at Duquesne University in the fall of 2003. Eight participants responded to teacher-generated vignettes, created diagrams and rubrics, created their own vignettes, and recorded their thoughts concerning vignettes in reflective learning logs. These participants also completed a questionnaire that addressed the use of vignettes as a teaching strategy and learning activity. This questionnaire included a Likert-scale for rating the strategies and activities as experience in the course, a ranking section for how participants would like to learning course material (learning activities) in other courses, and a ranking section for how participants would like to teach their own courses (teaching strategies).

This research indicates that the use of teacher-generated vignettes can increase academic achievement, and that learner-generated vignettes can help students achieve higher order thinking. Within this population this study showed three significant results. First, within the Instructional Techniques course, participants preferred the use of teacher-generated vignettes to any other teaching strategy or learning activity used. Second, teacher-generated vignettes were preferred as a learning activity over all other learning activities when learning other types of course material; student generated vignettes were preferred as a learning activity when compared to lectures, student demonstrations, projects, online slide presentations, online discussions, and diagrams. Third, when considering preferences in teaching strategies, teacher-generated vignettes were ranked second to teacher demonstrations; learner-generated vignettes ranked above online presentations, online discussions, reflective learning logs, and lectures.

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## CHAPTER 1

### INTRODUCTION

Adult learners and their learning needs have been studied for years by adult learning theorists such as Knowles (1970, 1978, 1984, 1995), Cross (1976, 1981), and Brookfield (1986, 1995), so that adult learners may experience meaningful learning in their education. Throughout history, adult learners have one commonality: the need to apply their learning within their own personal and/or professional lives. In the medieval age, for example, apprenticeships available through the guild system permitted adults to apply their skills to a specific trade (Reynolds, 1961, pp. 232-233). During colonial times, learning to read the bible was one of the significant aims of education (Merriam & Brockett, 1997, p. 17). Later, in the industrial age, training programs that provided training on the job were necessary so that factory workers were able to perform their jobs (Woodward, 1894). Throughout the later part of the 20<sup>th</sup> century, when the number of Americans holding professional positions increased, many adults decided to “go back to school” to update their skills in specific content areas such as business or to learn more about how they can apply certain software applications (Foster, 1997, p. 1). For years, it was very difficult for adult learners to get access to some of the educational programs they needed, due to lack of access and/or lack of time. Also, it has been important for many adult learners to obtain credit, in some way, for that which they already know and have experienced. Certainly, if adult learners are limited in the time they have for learning, then the learning experience should not be a “waste of” their time.

Recently, there have been several different strategies and accommodations considered in the teaching of adults. There has been more emphasis on providing

meaningful learning activities for adults, so that they can bring their previous knowledge and experience to the classroom, add to their knowledge base, and transfer their new learning to their own personal or professional situation (Knowles, 1970, 1978, 1984, 1995; Gordon, 1992; Jones, Valdez, Nowakowski, & Rasmussen, 1994; Ryan, 1995; Knowles, Holton & Swanson, 1998; Wlodkowski, 1999; Dottin & Weiner, 2001). Adults are excited about learning information that they can apply immediately, to help solve or troubleshoot problems in their lives. Many adults find academic achievement necessary to advance in their professions as well. Different forms of the narrative have been and are currently used successfully to get adults interested and to help them think about how to apply their learning in different situations (Maslin-Ostrowski & Ackerman, 1998; Marsick, 1998; Galbraith, 1998; Dottin & Weiner, 2001). Online learning, which became possible after the Internet and the World Wide Web evolved in the mid 1990's, helped adults gain access to education that they traditionally had to attend school for, and helped adults find the time most convenient for them to learn.

Online learning also plays a significant part of the future, and will continue to provide education to individuals facing time constraints. Stories have been with mankind for a very long time, and will continue to help people find meaning in life. There is a way to bring together considerations and needs for adult learners, narratives, and the benefits of online learning, to see if they are able to assist adults in higher order thinking and academic achievement.

### Purpose of the Study

Research has shown how the characteristics and learning needs of adult learners differ dramatically from youths (Knowles, 1970; Johnson & Bragar, 1997; Knowles,

Holton & Swanson, 1998). Educational elements such as a supportive but flexible learning environment (Knowles, 1970, 1978, 1984, 1995; Vella, 1994; Johnson & Bragar, 1997), consideration of prior learning experiences (Knowles, 1970, 1978, 1984, 1995), meaningful activities that promote transfer of learning to new environments and situations (Knowles, 1970, 1978, 1984, 1995; Vella, 1994; Johnson & Bragar, 1997; Wlodkowski, 1999), higher order thinking (Pepicello & Tice, 2000; Wojnar, 2000; Dottin & Weiner, 2001), and reflection (Brookfield, 1986; Johnson & Bragar, 1997; Dempsey, 2000) are important to adult learners. Academic achievement is especially important to those adults who are pursuing degrees in colleges and universities (Wright, 1994; Thompson, 1997; Kim, 1999; McKeachie, 1999). The main purpose of this study is to show how adults can achieve higher order thinking and academic achievement when they are provided with a supportive learning environment. Such an environment involves meeting their learning needs and requiring their participation in meaningful learning activities that consider higher order thinking and encourage academic achievement. One model considered in researching how adults learn is the Generative Learning Model. Wittrock notes that the Generative Learning Model takes into account the students' thought processes leading students to construct meaningful learning experiences resulting in higher academic achievement. "The model that underlies and unites these implications is based on the principle that learning is a generative process. Students learn what the instruction causes them to construct, using their knowledge, beliefs, and experiences. Learners create meaning" (Wittrock, 1987, p. 32). In this study, vignettes will be used as a generative learning activity to help students "create meaning." One environment in which the combination of the Generative Learning Model and vignettes may be used

successfully in helping adults achieve their goals is the online learning environment.

This study attempts to show that the use of vignettes within a hybrid online course structured according to the Generative Learning Model will prove to be a valuable combination to adult learners.

The Generative Learning Model, developed by Merlin Wittrock in 1974, has already been used successfully to help adults learn (Stein & Bransford, 1979; Stiebel, 1988; Wittrock & Alesandrini, 1990; Johnsey, Morrison, & Ross, 1992; Kourilsky, 1993; Hooper, Sales, & Rysavy, 1994; Kourilsky, Esfandiari & Wittrock, 1996; McGuire, 1999). The focus of the Generative Learning Model is for learners to actively generate meaningful relationships by linking prior learning experiences to new learning, thus creating a transfer of knowledge and skills to new situations and environments. The model accomplishes this through five major components, which are based on neural and cognitive processes essential in learning: attention, motivation, knowledge, generation, and metacognition.

In this model, the instructor constructs learning activities and opportunities so that students are directed or guided to what is important (attention component) and encouraged to pursue new learning by encouraging the learner that he or she is capable of being successful and is in control as to whether or not this occurs (motivation component). The learner's prior experience is considered so that relationships can be made between this experience and new learning (knowledge component). Then, the student is engaged in activities that require the generation of learning between prior experience and new learning, and the generation "among the concepts or parts of the information to be learned" (Wittrock, 1994, p. 15) (generation component). Finally, the

students reflect on their own learning and realize what they have accomplished, and “when to use different learning strategies” (metacognition component) (Wittrock, 1990, p. 372).

This model considers a number of adult learner needs, such as having the learners active in the learning process (Knowles, 1970, 1978, 1984, 1995; Johnson & Bragar, 1997, p. 366; Vella, 1994, pp. 3-4; Brookfield, 1986; Knox, 1986, p. 35); having the learners believe that they are responsible for their own learning (Knowles, 1970, 1978, 1984, 1995; Jones et al., 1994); having the learners apply or transfer learning to his or her own set of situations (Johnson & Bragar, 1997, p. 366; Kolb, 1984; Wlodkowski, 1999; Vella, 1994, pp. 3-4); and having the learner reflect upon what he or she has learned, and how he or she learned it (Kolb, 1984; Vella, 1994, pp. 3-4; Brookfield, 1986). This study will focus upon setting up the course and activities by following the Generative Learning Model, and by concentrating on one specific type of generative activity, the use of vignettes, as a teaching strategy and learning activity. Whether created by the teacher or by the student, the use of vignettes, a type of story, is considered a generative activity, because it requires students to “generate integrated relationships between the external stimuli and the memory components” (Grabowski, 1996, p. 914). In this respect, vignettes function like analogies, examples, applications, and interpretations, which are cited as this type of generative activity by Grabowski (1996, p. 914) and by Wittrock (1990, p. 354).

Research indicates that using stories also provides several benefits to adult learners, such as: providing collaboration and community learning (Baker & Greene, 1977; Wiles, 1989); allowing adults to control and form the inchoate, and giving their

lives meaning (Daloz, 1986); enhancing “visual, verbal, and memory skills” (Wiles, 1989, p. 98); and facilitating “adult development” (Wiles, 1989, p. 98). To interest and motivate adult students, the researcher had success in increasing students’ involvement by providing anecdotes drawn from personal experiences or those of other students and coworkers – that is, stories pique students’ interest, transforming them from passive observers to active learners. Storytelling has been defined as:

The dynamic of interpersonal communication whereby an individual’s experience (one’s own or that reported by others) is shared with one or more persons in direct human contact in shared physical space; fiction, myths, tales, and fantasy as well as actual occurrences are included in this definition (Wiles, 1989, p. 8).

Vignettes have been used in a number of ways in adult education. In *The Thinking Classroom*, for example, vignettes, or “pictures of practice” are used to show teachers how they can “use and teach a language of thinking in their classrooms” (Tishman, Perkins & Jay, 1994, p. 15). David G. Brown, Vice President and Dean at the International Center for Computer-Enhanced Learning, Wake Forest University, uses vignettes in a similar way, except for the content, where professors demonstrate how they transformed courses with technology, discuss the impact technology had on teaching and learning, and share important lessons learned in his book *Interactive Learning: Vignettes from America’s Most Wired Campuses* (1999). Patricia B. Campbell explains the importance of vignettes in math and science education in the brochure, “How Would I Handle That? Using Vignettes to Promote Good Math and Science Education” (1996). Dale Maeder, professor at University of California, Los Angeles (UCLA) Extension, has



used vignettes successfully since 1995 to teach adult online courses in the Online Teaching Program, as well as in a Master's of Educational Technology course with New Jersey City University (NJCU), Distance Learning for Educators. In the spring of 2002, Maeder said the following about his students:

This quarter at UCLA Extension (and semester at NJCU) I've noticed quite a few comments from my participants who've indicated that the vignettes have challenged them to make new connections with the readings, lectures, and group discussion comments. The application of a new concept to a new area has made them work harder than they thought they would (Maeder, March 14, 2002).

Maeder utilized vignettes as a way to help students use higher order thinking skills, and to assess students in their learning. This study aims to show that vignettes, when used within the Generative Learning Model, can fulfill two significant adult learner needs. These needs include reaching higher levels of thinking in the learning process (Wilcox & Wojnar, 2000, p. 11; Zemke & Zemke, 1988), and applying their learning in their own classrooms or learning environments at work or a transfer of learning (Knowles, 1970, 1984, 1995; Vella, 1994, p. 3). When used as generative learning activity in the Generative Learning Model, vignettes may enhance academic achievement.

Online learning is shown to provide adults with flexibility for learning material and engaging in meaningful discussions (Harrasim, 1995; Wojnar, 2000; McKenzie, 2001), freedom to participate as an individual with unique ideas and insights (Harrasim, 1987; Hiltz, Dufner, Fjermestad, Kim, Ocker, Rana, & Turnoff, 1996), and challenge

adult learners in higher order thinking (Pepicello & Tice, 2000; Wojnar, 2000; Boyd, Murphrey, & Rogers, 2001; Gunawardena & McIsaac, 2004). Online learning falls into one of two categories; either the course is held completely online, where there is no face-to-face contact, or the course is hybrid, which combines face-to-face and online meetings (Ko & Rossen, 2001). In hybrid courses, which are considered for this study, adult learners can receive sufficient social contact to learn more about the others in the class, talk through their own professional and learning goals, become more acquainted with the instructor, and obtain the information they need online at their own convenience.

There are two major outcomes this study may show as a result of the use of vignettes within the Generative Learning Model in an online learning environment: higher order thinking and academic achievement. Scenarios, which are similar to vignettes, already were used in problem-based learning (Barrows, 1996; Fogarty, 1997; Bligh, 1999) resulting in higher order thinking. However, this study focuses on the use of vignettes in the Generative Learning Model with outcomes of academic achievement and higher order thinking. Meaningful learning involves higher order thinking, such as metacognition and transfer of learning, both of which are supported by the Generative Learning Model (Wittrock, 1992, 1994, 2000). In this study, higher order thinking is determined by the last four levels of thinking as defined by the Taxonomy of Educational Objectives, which includes application, analysis, synthesis, and evaluation. This is also known as Bloom's Taxonomy. The research indicates that higher order thinking includes the last three levels of thinking; however, in addition, this study includes application. The Taxonomy of Educational Objectives will be considered in this study as

it has been in previous studies of adult learning (Odom, 1998; Wojnar, 2000; Norwalk, 2000; van der Wal & van der Wal, 2003).

The Taxonomy of Educational Objectives is referenced by several different individuals (DiVesta, 1989, p. 42; Popham, 1993; Novak, 1997; Wiggins, 1998; Oosterhof, 2004) when discussing how to develop meaningful learning goals and course objectives relevant to student achievement. Thus, the activities and assessments considered in this study are designed to require students to use higher order thinking skills.

Recent research has encouraged the use of performance based assessments as a way to measure academic achievement, by assessing meaningful activities through alternative evaluations (Wiggins, 1998; Airasian, 2001; Ananda, 2000; Reeves, 2001; Brookhart, 2004). Performance-based assessment is especially useful when considering meaningful activities that help students achieve course goals. Such assessments are usually evaluated by scoring guides and rubrics (Wiggins, 1998; Airasian, 2001; Brookhart, 2004), which define the criteria required to successfully complete the task or performance to be assessed. This study considers vignettes as a performance-based assessment and incorporates the use of scoring guides and rubrics in the evaluation process.

### Rationale

Research has indicated that the use of storytelling (Wiles, 1989) has been successful in the teaching of adults; however, the use of vignettes, as defined in this study, to teach adults has not been researched – either in face-to-face classrooms or in online courses. This study will focus on the use of vignettes with adult learners.

Some research was conducted on the use of Generative Learning Model, which is a model that actively engages the learner (Wittrock, 1974, 1978, 1986, 1991, 2000), and is shown to benefit adult learners (Stiebel, 1988; Higginbotham-Wheat, 1991; Tsai, 1995; McGuire, 1999). Maeder has indicated students' interest when using vignettes in the Generative Learning Model to teach his online courses (March 14, 2002); however, other research relating to the benefits of using vignettes in the Generative Learning Model when teaching adults has not been found.

Research has been conducted concerning the effectiveness of the Generative Learning Model and the use of specific teaching strategies for teaching adults (Stiebel, 1988; Higginbotham-Wheat, 1991; Tsai, 1995; McGuire, 1999). However, minimal research has been done to demonstrate the effects of a generative activity on higher-level learning (Grabowski, 1996, p. 915; 2004, p. 739), and the researcher has not found substantial research showing the effects of a generative activity on academic achievement.

Generative Learning has been cited as an effective way for teaching and learning online (Higginbotham-Wheat, 1991; Hiltz, 1997; Grabowski, Koszalka & McCarthy, 1999; Schaverien, 2000; McGuire, 2003); however, not much research has been done on how it affects the learning of adults online.

The research is limited on whether the use of vignettes is preferred to other traditional teaching strategies or learning activities, such as lectures, online slide presentations, teacher modeling of instructional techniques, student-completion of teacher-generated vignettes, online discussions, student demonstrations of instructional

techniques, diagrams, rubrics, creating learner-generated vignettes, and reflective learning logs.

### Statement of Problem

This study will focus on using a hybrid online course that was designed to incorporate the five components of the Generative Learning Model. The purpose of this study is to determine: 1) how student-completed vignettes provided by the teacher enhance academic achievement; 2) how learner-generated vignettes promote higher order thinking, including application, analysis, synthesis, and evaluation; and 3) whether the use of vignettes is a preferred method of teaching and learning.

### Research Questions

1. Will the student completion of teacher-provided vignettes, as they are presented in a hybrid online course designed with the Generative Learning Model, enhance academic achievement as measured in the following types of student work/ activities:
  - Asynchronous discussions
  - Diagrams
  - Rubrics
2. Will the writing of learner-generated vignettes, as they are presented in a hybrid online course designed with the Generative Learning Model, promote higher order thinking including application, analysis, synthesis, and evaluation as measured in three different asynchronous discussions?

3. Do students prefer vignettes to lectures, teacher demonstrations, student demonstrations, projects, online slide presentations or online discussions as shown in the following:

- Student reflective learning logs
- Questionnaire (distributed at the end of the course)

#### Delimitations and Limitations of the Study

1. The student population will be limited to eight students taking the GITED 631 hybrid course, Instructional Techniques, in the School of Education at Duquesne University.
2. All students will be enrolled in a Master's level program in the School of Education at Duquesne University.
3. The Instructional Techniques course was taught previously as an online course; however, the instructor and the researcher recreated the setup and design of the course so that vignettes and the elements of the Generative Learning Model could be considered.

#### Definition of Terms

Asynchronous Discussion	A discussion in which “the participants may connect at any time around the clock, and from any location in the world accessible by the Internet or a reliable telephone system, rather than having to be online at the same time. The system stores the entries in a permanent, ordered transcript which keeps the equivalent of ‘bookmarks’ to separate anything that is ‘new’ for each individual from items that have already been seen” (Hiltz, 1997, p. 2).
Adult Learner	For the purpose of this study, the adult learner will be

defined as an adult who is a non-traditional student pursuing an advanced degree with one or more of the following responsibilities: working full-time or part-time, raising and/or supporting a family, and taking care of elderly parents or relatives.

Bloom's Taxonomy	See Taxonomy of Educational Objectives.
Case Method	Refers to a method of instruction based on real-life examples. This method was "developed by Christopher Langdell of Harvard's Law School in the 1880's and later introduced into Harvard's Business School" (Marsick, 1998, pp. 197-198).
Case Story	Stories that simulate the real world but are written by individuals within the classroom. This method allows for a reflective, collegial learning that merges aspects of the case study method with the "tradition, artistry and imagination of storytelling" (Maslin-Ostrowski & Ackerman, 1998, p. 303). These stories are both a "written and an oral description of a real-life critical incident or dilemma of practice that is told from the author's perspective"(Maslin-Ostrowski & Ackerman, 1998, p. 303).
Case Study	Consists of "an account of a problem situation, including enough detail for learners to suggest possible solutions" (Ford, 12-13, 1969). A case study is also defined as "a second-hand account of something that did happen, or a first hand account of something that could happen" (Ford, 14, 1969).
Course Management System	"A software program that contains a number of integrated instructional functions; [it is] also known as <i>integrated application software</i> , <i>online delivery system</i> , <i>educational delivery application</i> , or <i>online tool suite</i> " (Ko & Rossen, 2001, p. 313).

Formal Narrative	“An important part of any literate culture. Examples of formal narratives include, among other things, books, plays, recordings, poems, stories, and the like” (Shank, 2002, p. 152).
Generative Learning Model	A cognitive model of “human learning with understanding” (Wittrock, 1974a, p. 87) that was developed by Merlin C. Wittrock in 1974, which focuses on considering the learner’s previous learning experiences and understandings so that the learner can actively generate meaningful relationships between this prior knowledge and new information. “Human learning with understanding is a generative process involving the construction of (a) organizational structures for storing and retrieving information, and (b) processes for relating new information to the stored information” (Wittrock, 1974b, p. 182). That is, the model focuses on how information can be first stored and retrieved, or recalled from memory, and then related or transferred to new situations. The model also supports metacognition, which requires the learner to think about his or her learning (Wittrock, 1994; Wittrock, 2000).
Hybrid Course	Combines “both online and face-to-face activities” (Ko & Rossen, 2001, p. 10). This differs from a face-to-face learning environment with online aspects, where the learning really takes place in the classroom. A hybrid course actually requires distance learning to occur; that is, there is coursework to be completed during the interval between face-to-face sessions and there are activities that require students to participate in learning online.
Knowledge Transfer	(Or Transfer of Knowledge) “Occurs when prior learning (task A) affects new learning (task B). Typically, prior learning is measured by an achievement test (e.g., percent



	correct on task A) and new learning is measured by ease of learning (e.g., time to master task B)” (Mayer & Wittrock, 1996, p. 48).
Performance Assessment	“Assessments in which pupils carry out an activity or produce a product in order to demonstrate their learning are called performance assessments. They may also be called alternative or authentic assessments” (Airasian, 2001, pp. 228-229).
Problem Based Learning	“The learning that results from the process of working toward the understanding or resolution for a problem. The problem is encountered first in the learning process” (Barrows & Tamblyn, 1980, p. 2).
Rubric	A rubric “tells potential performers and judges just what elements of performance matter most and how the work to be judged will be distinguished in terms of relative quality” (Wiggins, 1998, p. 153).
Scenario	“Scenarios are stories about the way the world might turn out tomorrow, stories that can help us recognize and adapt to changing aspects of our present environment. They form a method for articulating different pathways that might exist for you tomorrow, and finding your appropriate movements down each of those possible paths. Scenario planning is about making choices <i>today</i> with an understanding of how they might turn out” (Schwartz, 1991, pp. 3-4).
Scoring Guide	A table that shows the criteria of a particular performance and the numerical scores for each criteria.
Taxonomy of Educational Objectives	Education classification system that focuses on the cognitive domain. This system includes the following levels, given in order from lowest to highest, of descriptions of desired student behavior: knowledge, comprehension, application, analysis, synthesis, and evaluation. “It is the domain in

	<p>which most of the work in curriculum development has taken place and where the clearest definitions of objectives are to be found phrased as descriptions of student behavior” (Bloom, Engelhart, Furst, Hill, &amp; Krathwohl, 1956, p. 7).</p>
Transfer	<p>“Occurs when a person’s prior experience and knowledge affect learning or problem solving in a new situation. Thus, transfer refers to the effect of knowledge that was learned in a previous situation (task A) on learning or performance in a new situation (task B)” (Mayer &amp; Wittrock, 1996, p. 48). In this instance, “problem task B must be in a different, but related domain from problem task A; if they’re too closely related, then this is not transfer, that is just confirmation that a particular skill or concept has or has not been mastered” (Maeder, November 12, 2002).</p>
Vignette	<p>“Vignettes are short stories without an ending that are written to reflect, in a less complex way, real-life situations in order to encourage discussions and potential solutions to problems where there is no one ‘right’ answer. Vignettes are used as teaching devices or strategies, as an assessment method, and as learning activities. The six key aspects of this definition are: (a) a vignette is a story; (b) a vignette is short; (c) a vignette is purposely incomplete; (d) a vignette simplifies a real-life situation; (e) a vignette is intended to encourage independent thinking and unique responses; (f) a vignette is purposely vague so that multiple solutions can be defended. When vignettes are used as an assessment tool, the seventh criterion when creating a vignette is the following: (g) a vignette purposely involves a situation that is unfamiliar to all participants” (Maeder, April 4, 2002).</p>
Vignettes, Abridged	<p>“In an abridged vignette, the participant is instructed to demonstrate mastery of course content by analyzing and</p>

defending various aspects of the vignette. An abridged vignette focuses on the end product, and “provides scaffolding for multiple interpretations linked to the course content” (Jeffries & Maeder, 2004, p. 9).

Vignettes, Truncated “In a truncated vignette, the participant is instructed to complete the vignette according to a set of criteria defined by the course curriculum... the participant focuses on the process of completing the vignette rather than on an end product.” Therefore, the truncated vignette is “more open-ended” (Jeffries & Maeder, 2004, p. 9).

### Summary

When selecting the different teaching strategies and learning activities that are effective in teaching adults, it is necessary to consider the needs of the adult learners. These needs include considering their previous experiences and understanding, achieving higher order thinking via meaningful activities, transferring their knowledge to new situations, and achieving academically. This study will attempt to show that a hybrid online course designed with the combination of the Generative Learning Model and the use of vignettes is very successful in helping adults learn, and that a hybrid online learning environment helps to provide adults the social support and freedom they need to learn. The Generative Learning Model provides a way to lead adult learners from their prior knowledge and understanding to a new understanding of how to apply or transfer their knowledge to different situations, as a result of generating new and meaningful relationships. Vignettes will be considered as an activity that can help adults generate new and meaningful relationships. This study also intends to show the use of vignettes within the Generative Learning Model as one type of performance assessment and learning activity that provides adults the benefits of higher order thinking, transferring

their learning, and academic achievement. The study then will help determine whether students prefer the use of vignettes as a teaching strategy and learning activity compared to lectures, teacher demonstrations, student demonstrations, projects, online slide presentations or online discussions.

## CHAPTER 2

### REVIEW OF THE LITERATURE

#### Introduction

This literature review focuses on the following strands: the needs of adult learners; the use of the Generative Learning Model for adult learners; the use of vignettes as an activity for teaching and learning; the online learning environment; and academic achievement with higher order thinking as they apply to adults. This review also provides literature on adult learners, their learning characteristics and learning needs as they pertain to learning environment, learning strategies, and learning outcomes.

The learning environment best suited for adults is supportive, focuses on course goals and individual goals of the adult learner, promotes active learning, and considers learning activities that assist adults in transferring their learning to their own situations, and one that provides flexibility for the adults' learning needs. This study considers the Generative Learning Model, which concentrates on the learner actively participating in the learning process, generating meaningful relationships, transferring learning, and reflecting upon learning. When considering learning strategies for adults, the types of teaching strategies and learning activities noted as successful are those that consider their prior experience (Knowles, 1970, 1978, 1984, 1995; Knox, 1986; Moore & Bogotch, 1993; Evans & Miller, 1997), consider reflection (Brookfield, 1986; Vella, 1994; Johnson & Bragar, 1997; Dempsey, 2000), require the learner to take an active part in his or her learning (Knowles, 1970, 1978, 1984, 1995; Brookfield, 1986; Evans & Miller, 1997), and are meaningful and helpful in transferring learning into his or her own environment (Knowles, 1970, 1978, 1984, 1995; Gordon, 1992; Jones, Valdez, Nowakowski, &

Rasmussen, 1994; Ryan, 1995; Kolb, 1984; Wlodkowski, 1999; Dottin & Weiner, 2001). Vignettes, which meet all of these criteria and also are a type of generative learning activity, will be considered in this study.

The use of vignettes within the Generative Learning Model will be studied in an online learning environment. An online learning environment meets adult learner's needs by allowing for flexibility in obtaining and reviewing information (Hiltz, 1997) and by providing an atmosphere in which higher order thinking and communication can occur through active learning (Pepicello & Tice, 2000; Wojnar, 2000; Alessi & Trollip, 2001; Gunawardena & McIsaac, 2004).

Finally, this study investigates how learning outcomes considered important to adult learners, such as higher order thinking (Wilcox & Wojnar, 2000; Wojnar, 2000; Dottin & Weiner, 2001) and academic achievement (Wright, 1994; Thompson, 1997; Evans & Miller, 1997; Kim, 1999; McKeachie, 1999), will be met via the use of vignettes as presented in the Generative Learning Model. The next section addresses historical contributions to adult learning.

#### Historical Contributions to Successful Adult Learning Experiences

Several historical events that have contributed to a deeper understanding of adult education, but this review will include those that are significant to the main components of this study: adult learners, the Generative Learning Model, stories and vignettes, and educational outcomes such as higher order thinking and academic achievement.

#### Adult Learners

Adult learners have engaged in learning activities since the time of Socrates, Plato and Aristotle. In 300 B.C. Socrates (470-399 BC) engaged his learners by asking

questions (known as the Socratic or dialectic method)” (Clark, 2000). In this method, Socrates would begin a conversation in which he would act as though he knew nothing, and then use his questioning skills to allow his students “to learn by self-generated understanding” (Clark, 2000). The Socratic method is demonstrated in some of Plato’s dialogues, such as *Protagoras*, *Crito*, and *Phaedo*. Plato (428-348 BC), who was a student of Socrates and the teacher of Aristotle, founded what is said to be the first university around 385 B.C. Plato believed in the nurturing of the soul within education, and that education should assist in the “proper nurture to the growing soul, or for adjusting its surroundings to its higher needs” (Nettleship, 1955, p. 8). This can be seen in Plato’s *Republic*, Book IV, 429-430 and Book VI, 484-487; 492 (Plato, trans. 1950). This suggests that Plato believed in the importance of experiential learning, which is considered as an “early suggestion to the current theory of constructivism” (Clark, 2000). Aristotle was given credit for being “the first to observe that ‘association’ among ideas facilitated understanding and recall” (Clark, 2000). In the work *On Memory*, 450a 1-13, Aristotle explains that abstract concepts can be retained in memory as a result of sensory images that have a certain association (trans. 1984). Later, in verses 451b23 through 452a16, Aristotle explains the importance of a “starting point” when deciding how to associate the images, so that they can be recalled. The art of mnemonics, discussed by Aristotle in his work, *On Memory*, 451a12-15, involves using an established pattern to “frame or correlate with a list to be remembered, is a special case of developing habits of association in the memory” (Brumbaugh & Lawrence, 1963, p. 61). These men influenced several other significant individuals who developed theories for successful learning experiences for adults.

Education that adults are able to apply to their immediate current situation is extremely valuable, especially if it is education or training that relates to their careers (Beitler, 1997). Apprenticeships, which help adults in the learning and training required for developing job skills, began about 2000 B.C. for scribes in Egypt (Clark, 2000). It was not until the Middle Ages, between the twelfth and fifteenth centuries, that the guild system was established, where individuals who worked as apprentices were protected by strict regulation of hours, tools, prices, and wages (Reynolds, 1961). In America, the first apprenticeship programs recorded were those run in 1607 in Jamestown, Virginia (Knowles, 1960, p. 7). During Colonial times, adult education was unorganized and mostly vocational (Knowles, 1960, p. 7). However, the Puritans founded Harvard College in 1636 and soon after, the foundations of the American public school system were laid as the colonies were established (Knowles, 1960, p. 7).

In the 20<sup>th</sup> century, there was a movement to study the needs of adult learners and to see how these educational needs could be met. In 1971, Van Enckevort noted that in 1921, an individual by the name of Eugen Rosenstock specified that adults required different teaching methods than those used with children in a report to the Academy of Labor in Frankfurt:

It is not enough to translate the insights of education theory [or pedagogy] to the situation of adults... the teachers should be professional who could cooperate with the pupils; only such a teacher can be, in contrast to a “pedagogue,” an “andragogue” (Knowles, 1978, p. 49).

In the United States, Lindeman became interested in the manner workers were trained at the Frankfurt Academy of Labor (Stewart, 2004) and wrote about the needs of



the adult learner. He introduced Americans to the term “andragogy” in writings such as *Andragogik: The Method of Teaching Adults* and in *Education through Experience*, which he co-authored with Anderson (Stewart, 2004; Cooper & Henschke, 2001).

Lindeman is very well known for detailing the needs of adult learners in his work, *The Meaning of Adult Education*, written in 1926. Up until this point in time, pedagogy or “the art and science of teaching children,” (Knowles, 1970, p. 37), was used to teach adults. Eventually, there was more of a focus on how to teach adults, specifically. In 1926, the American Association for Adult Education was founded by Frederick Keppel. This association “served as a national clearing house for information about adult education” (Knowles, 1960, p. 23). In the 1920’s, there were other books written that encouraged adult learners, such as *Why Stop Learning* by Dorothy Canfield Fisher (written in 1927) and *Adult Learning* by E.L. Thorndike (written in 1928).

Later in the 20<sup>th</sup> century, individuals such as Knowles, Cross, and Brookfield provided research on the needs, characteristics, and ideal learning environments and theories of learning for adult learners. Other individuals such as Houle, Tough, Kolb, Knox, Wlodkowski, and Weiner studied what motivated adult learners. The works of some of these individuals will be reviewed in the next several paragraphs.

In 1960, Cyril Houle published the book, *The Inquiring Mind*, focusing on what motivates learners. Houle (1960) suggested that adults are motivated to learn because they are goal-oriented and focus on specific objectives, they are activity-oriented and focus more on activity than on content; and/or they are learning-oriented and focus on acquiring knowledge.

Knowles is well-known for his work with adult learners, and his use of the term “andragogy” to specify the study of adult learner’s needs. Based on his experiences as a YMCA director, where he taught astronomy, as well as other teaching experiences with adult learners, Knowles provided much insight into how to teach adults. His work, *The Modern Practice of Adult Education: Andragogy vs Pedagogy*, became renown, as it detailed the significant learning differences between children and adults, suggesting different learning principles, which will be explained in more detail later in this chapter.

Patricia Cross wrote two significant works that addressed the needs and characteristics of adult learners: *Accent on Learning* (1976) and *Adults as Learners* (1981). Cross developed the Characteristics of Adults as Learners (CAL) model, in the analysis of lifelong learning programs.

Knox’s (1986) Proficiency Theory postulated that “adults engage in learning activities mainly to enhance their proficiencies. You can use information about proficiencies to assess educational needs, encourage persistence, and relate new learning to old” (Knox, 1986, pp. 15-16). Knox defines proficiency as “the capability to perform effectively if given the opportunity and typically entails a combination of knowledge, attitudes, and skills” (Knox, 1986, p. 16).

Wlodkowski has taught at the college and university level and has published several books and articles in areas such as learning, motivation, instruction, adult development, and diversity. He suggests that adult motivation is the sum of the following (1985):

1. Success – “Adults want to be successful learners” (p. 7)

2. Volition – “It is critical that adults experience choice or willingness along with their success in their learning activity for their motivation to be sustained” (p. 7)
3. Value – “Adults feel much better when they have successfully learned something they wanted to learn as well as something they value” (p. 8)
4. Enjoyment –Adults want to have a pleasant learning experience (p. 8)

Originally, Wlodkowski cited six major factors supported by numerous theories of psychology and their related research as having a substantial impact on learners motivation – attitude, need, stimulation, affect, competence, and reinforcement (Wlodkowski, 1985, p. 45). However, in a later work, *Enhancing Adult Motivation to Learn (Revised Edition): A Comprehensive Guide for Teaching All Adults* (1999), he introduced four essential motivational conditions (two of which are from the original six major factors) that assist in adult learning. These are inclusion, attitude, meaning, and competence, and are defined in more detail in Table 1.

Table 1

*Definitions of Motivational Conditions According to Raymond Wlodkowski*

Motivational Condition	Definition
Inclusion	“The awareness of learners that they are part of an environment in which they and their instructor are respected by and connected to one another” (p. 69).
Attitude	“A combination of concepts, information, and emotions that results in a predisposition to respond favorably or unfavorably toward particular people, groups, ideas, events, or objects” (Johnson, 1980, p. 59).
Meaning	There are two ways of understanding meaning. “Deep meaning implies that the experience or idea increasing in complexity is connected to an important goal or ultimate purpose, such as family survival or the meaning of life... Another way to understand meaning is to conceive of it as the ordering of information that gives identity and clarity, as when we say the world castle means a large fortified residence or when we recognize our telephone number in a listing” (pp. 75-76).
Competence	“The desire to be effective at what we value” (p. 78).

Several of these individuals made contributions to a better understanding of what adults need in their academic learning environment. These contributions will be addressed in the “Theories and Research Related to Learning and Academic Settings” section.

### Generative Learning Model

Several historical contributions were made to the understanding of memory, realizing the significance of linking prior experiences of learners to new learning, requiring the learner to be active, and incorporating the mental processes required for learning, all of which are important to the Generative Learning Model.

Wittrock traces man's understanding of memory back to ancient times, where focus was on imagery and mnemonic devices and their link on how memory works (1977, 1978). Wittrock explains that the classical art of memory consisted of what Simonides and Aristotle proposed (1977, 1978). Cicero's *De Oratore*, written about 55 B.C., explains how Simonides understood memory (trans. 1958). In Book II, lxxxvi, 351-4, Cicero relates a story demonstrating that individuals who wanted to train their memory must select places and form mental images of the objects they want to remember and store these images in a certain order so that they can be recalled exactly in the same way. As explained previously, in Aristotle's *On Memory*, Aristotle notes the importance of organizing images so that they can be recalled from memory. That is, Aristotle "believed that we remember information only by forming and storing images of it. He believed that we retrieve or recollect the stored information by association of the ideas or images to each other in sequential order, arranged according to the principles of similarity, contrast, and contiguity" (Wittrock, 1978, p. 16).

Wittrock wrote that during the Middle Ages, "Thomas Aquinas and Albert the Great revived the classical art of memory" (1978, p. 16). Albert the Great was influenced greatly by Aristotle and was Thomas Aquinas' teacher. Aquinas was also influenced by Aristotle, and he developed four "precepts of memory" taken in part from Aristotle's *On*

*Memory and Ad Herrenium* (written anonymously), and described by Yates (1966, pp. 74-76). These precepts, provided in *Summa Theologiae*, Book 36, Question 49, Second part of the second part, Rp2 Para 2/2, include the following: 1) choose unique images that are the most likely to stay in memory, 2) decide on how these images should be placed, 3) find a place to dwell in solitude or concentrate on these images, and 4) meditate frequently on what is to be remembered (Aquinas, trans. 1974). Wittrock (1985, p. 123) documents that later, in the Renaissance, there was a focus on cognition (new concept) and imagination in facilitating learning and memory, as well as training memory:

In the Renaissance these memory systems became generative; they were used to stimulate imagination as well as to enhance memory. Similar to the ancient belief that memory was a gift of the gods, imagination was believed to possess magical power. This renaissance belief in the power of the imagination to understand the universe must surely have contributed to the rebirth of knowledge that occurred then.

Perhaps the most educationally significant part of these beliefs about learners' thought processes is their conception of the generative processes of learning and memory. In these ancient perspectives, learner's enhanced memory by constructing relationships between something familiar and something to be remembered.

There was a decline in the use of imagery in training memory in post-Renaissance times (Wittrock, 1977, p. 168). From about 1900 to 1950, behaviorism influenced teaching. Wittrock notes that "there was little need for a concept of memory when stimuli controlled behavior" (1978, p. 17).

In the early 1800's, one of the first educators realizing the importance of the mental processes in learning was Johann Herbart, who was "devoted to enabling the student to assimilate his knowledge in adequately organized form" (Dunkel, 1969, p. 74). Herbart believed, "The student should *clarify* a concept, and then *associate* it properly with other related concepts in a *system* structured by explicit *principles* (method)" (Dunkel, 1969, pp. 74-75). Herbart is remembered more for Herbartianism, which is defined as the pedagogy of Herbart. Herbartianism proposed the following steps in education: Preparation, Presentation, Association, Generalization, and Application (Dunkel, 1969, p. 116). During the Preparation stage, the teacher had the child recall material he or she was well familiar with that was relevant to the new material to be learned. In the Presentation stage, the teacher introduced the subject matter in an "interesting and vivid a way as possible" (p. 116). Then followed Association and Generalization, where the material was associated with other information and then "pulled together" (p. 116). Finally, students were required to practice "fitting new material" into a general concept (p. 117).

Even though Herbart's philosophy of education was based on the formation of moral character through building the will, the aim of Herbartianism was "purely cognitive"; that is, "the pupil was to be able to organize and structure his knowledge, with special emphasis on the development of general concepts or general ideas" (Dunkel, 1969, p. 117). This system is significant because it influenced education in America from the latter decades of the nineteenth century to the early part of the twentieth century (Hilgard, 1996, pp. 991-995).

Several other educational theorists, such as Dewey, Piaget, Thorndike, Bartlett, and Ausubel, who have contributed to the understanding of adult learners, were strong advocates of certain cognitive principles that are shared with the Generative Learning Model.

Merriam and Brockett cite Dewey, who began the Progressive Movement in the late nineteenth century, as an individual who contributed much to adult learning (1997, p. 36). Dewey promoted principles such as “expression and cultivation of individuality,” “free activity,” “learning through experience,” “making the most of the opportunities of present life,” and “acquaintance with a changing world” (Dewey, 1938, pp. 19-20). Dewey believed that “there is an intimate and necessary relation between the processes of actual experience and education” (p. 20). According to Merriam and Brockett (1997, p. 36), Dewey contributed to “major principles in adult education,” such as the following:

- A focus on learners and their needs and experiences rather than on predetermined content
- The use of scientific methodology incorporating problem-solving, activity, and experience-based approaches to instruction
- Education as an instrument of social action and social change

Piaget developed descriptions of the stages of cognitive development: 1) pre-language stage, at which infants are able to display intelligent actions; 2) pre-operational stage, at which children are able to express themselves, but are still struggling with problems of conservation; 3) stage of concrete operations, at which individuals are able to work with simple quantities and numbers; and 4) the stage of propositional operations, at which individuals are able to develop new logical operations and eventually think at a



more abstract level (1963). Most adults operate in one or both of the following stages: the stage of concrete operations (concrete operational stage) where “intelligence is demonstrated through logical and systematic manipulation of symbols related to concrete objects” and the stage of propositional operations (formal operational stage), in which “intelligence is demonstrated through the logical use of symbols related to abstract concepts” (Huitt & Hummel, 2003).

In *Elementary Principles of Education*, Thorndike and Gates (1930) discussed how learning is reacting, in which the learner needs a motive to take an active role in his or her learning, and that the learner recalls images in the process of acquiring knowledge. Thorndike and Gates explained the importance of readiness, where an individual is “ready to act in a certain way” (p. 89), and noted that it is important that the learner realizes he or she has the aptitude for completing a task, and that the learner believes he or she can complete the task successfully (p. 91). Finally, Thorndike and Gates discussed the significance of transfer and how it can be encouraged (1930, pp. 101-105). Wittrock noted that Thorndike “greatly affected our conception of human learning when he successfully extended his laboratory findings into empirical research in education. As a result, he devastated faculty psychology; and he revolutionized our conceptions of transfer, learning, teaching, and instruction” (Wittrock, 1974a, p. 87).

Bartlett, who was the first to develop schema theories (1932), “recognized that the way experiences were represented and organized in long term memory had important effects on attention, perception, learning, memory, and retrieval” (DiVesta, 1989, p. 54). Bartlett (1932, p. 201) described schema in the following way:

“Schema” refers to an active organization of past reactions, or of past experiences, which must always be supposed to be operating in any well-adapted organic response. That is, whenever there is any order or regularity of behavior, a particular response is possible only because it is related to other similar responses which have been serially organized, yet which operate, not simply as individual members coming one after another, but as a unitary mass. Determination by schemata is the most fundamental of all the ways in which we can be influenced by reactions and experiences which occurred some time in the past. All incoming impulses of a certain kind, or mode, go together to build up an active, organized setting: visual, auditory, various types of cutaneous impulses and the like, at a relatively low level; all the experiences connected by a common interest: in sport, in literature history, art, philosophy, and so on, on a higher level.

In the 1960’s, Ausubel wrote about the significant of cognitive structure variables in a learner’s ability to retain and organize knowledge, and that this is relevant to meaningful learning. According to Ausubel (1963, pp. 26-27),

Existing cognitive structure – an individual’s organization, stability, and clarity of knowledge in a particular subject-matter field at any given time – is regarded as the major factor influencing the learning and retention of meaningful new material in this same field. The properties of cognitive structure determine both the validity and clarity of the meanings that emerge as new material enters the cognitive field, as well as the nature of

the interactional process that takes place. If cognitive structure is stable, clear, and suitably organized, valid and unambiguous meanings emerge and tend to retain their individuality or dissociability....

In meaningful learning, cognitive structure is always a relevant and crucial variable, even if it is not deliberately influenced or manipulated so as to ascertain its effect on new learning.

### Stories and Vignettes

For many years, stories have been used to record, or interpret, what is happening in the world. Kearney explains that even though people shared myths to “explain themselves to themselves and to others,” it was Aristotle who “first developed this insight into a philosophical position” (Kearney, 2002, p. 3). In *Poetics*, 1448 b5-b20, Aristotle explains that stories, or narratives, are an art form that imitates life, from which individuals can enjoy and learn (trans. 1984). Later, Aristotle explains in 1452a 2-10 and in 1452b30 – 1453a30 that these are also meant to arouse emotions from the audience. Therefore, stories, or narratives, require audience participation and bring people together to a different level of understanding. “The art of storytelling – defined as the dramatic imitating and plotting of human action – is what gives us a shareable world” (Kearney, 2002, p. 3).

There are different forms of stories. One type is the myth, which illustrates the meaning of something but is also “an account whose historical veracity is irrelevant”(Shank, 2002, p. 148). Myths are traditional stories of unknown authorship, usually having a historical basis (Denning, 2000). These offer material from which children formed their concept of the world’s origin and purpose. “The cultural hero is

presented to the listener as a figure he or she ought to emulate in his or her own life, as much as possible” (Bettelheim, 1989, p. 26). Myths, however, are pessimistic (p. 37).

Another type of story is the fable, which is “a realistic or imaginary account that is supposed to teach us a moral lesson” (Shank, 2002, p. 150). Fables are also described as cautionary tales which, by arousing anxiety, prevent the readers from acting in ways that are described as damaging to the reader or listener (Bettelheim, 1989, p. 38). These are fictitious stories that are meant to teach a moral lesson; they usually have talking animals as characters (Denning, 2000).

The folktale is “an account from the lives of usually ordinary folk, and its purpose is to show us how things really are and what things really mean in a given cultural setting” (Shank, 2002, p. 150). Bettelheim explains that some folktales evolved out of myths, and others were incorporated into them; he also says that “these tales are the purveyors of deep insights that have sustained mankind through the vicissitudes of its existence, a heritage that is not revealed in any other form as simply and directly, or as accessibly, to children” (Bettelheim, 1989, p. 26).

The legend is “supposedly a historical account, but its meaning and purpose go well beyond the recording of that historical event” (Shank, 2002, p. 151). Legends are stories handed down for generations within a certain culture of people and are believed to have some sort of historical basis, even though this is not always verifiable (Denning, 2000).

The narrative is “a story created during the age of literacy, and so is governed by the rules of literary creation” (Shank, 2002, p. 152). Shank points out that there are two types of narratives: formal and informal. “Formal narratives are an important part of any

literate culture. Examples of formal narratives include, among other things, books, plays, recordings, poems, stories, and the like” (Shank, 2002, p. 152). “Informal narratives are accounts, often oral, that describe certain events, circumstances, or affairs without trying to adhere to any of the structure components we might find in more formal stories. ... The chief intent of the teller is to convey information or a set of impressions” (Shank, 2002, p. 152). This study focuses on vignettes, which can be categorized as a formal type of narrative.

Other types of narratives, such as case studies, case stories, and scenarios, have similar characteristics to vignettes and are considered for the purpose of this literature review.

Case studies are understood as “a second-hand account of something that did happen, or a first-hand account of something that could happen” (Ford, 1969, p. 14), and “can be used to orient learners to a new profession, organization, or social world” (Marsick, 1998, p. 201). The case study includes three components: a report, based on an actual situation; an analysis, which helps to determine underlying principles and problems; and a critical discussion, which assists in bringing forth new perspectives and uncovering underlying assumptions that might not be apparent.

Marsick (1998, pp. 197-198) points out the following:

The terms *case study* and *case method* are sometimes used interchangeably. However, case study is also used in research to mean the in-depth study of a problem or situation, whether or not it has direct implications for practice. Case method, on the other hand, almost always refers to a method of instruction based on real-life examples. The case

method was originally developed by Christopher Langdell of Harvard's Law School in 1880's and later introduced into Harvard's Business School.

In the mid 1990's, the case story approach was developed by Patricia Maslin-Ostroski and Richard H. Ackerman "to help people learn problem solving techniques and analysis, and to link classroom learning with practice" (Maslin-Ostrowski & Ackerman, 1998, p. 303). Case stories are stories that simulate the real world, and they are oral and written descriptions given by individuals within the classroom. This approach combines the reflection required with traditional case studies and adds the creativeness of storytelling (Maslin-Ostrowski & Ackerman, 1998, p. 303). The case story approach also takes into consideration the research done by Brookfield, 1995, where "beyond analyzing a particular problem, some groups are able to enter into a kind of critical conversation or real-talk where they learn to think together, less self-centeredly, and develop a deeper understanding of each other's practice" (Maslin-Ostrowski & Ackerman, 1998, p. 304). More specifically, for example, Brookfield discusses how teachers can share reflections on their own work experiences with each other, and includes a several-step process as to how this can be accomplished (1995, pp. 66-70).

The case story approach includes five essential steps: 1) freewrite activity, 2) writing case stories, 3) telling, listening to, and discussing case stories, 4) small group reflection, and 5) whole group reflection (pp. 305-307).

Another form of narratives used for educating adults is a scenario. Schwartz (1991, pp. 3-4), a scenario writer, says the following about scenarios:

Scenarios are a tool for helping us to take a long view in a world of great uncertainty. The name comes from the theatrical term "scenario" – the

script for a film or play. Scenarios are stories about the way the world might turn out tomorrow, stories that can help us recognize and adapt to changing aspects of our present environment. They form a method for articulating different pathways that might exist for you tomorrow, and finding your appropriate movements down each of those possible paths. Scenario planning is about making choices *today* with an understanding of how they might turn out.

Scenarios are not as in-depth as case studies, which are researched and based on a number of details of a specific business or organization. Groups of medical scenarios are offered for sale at some web sites; other web sites offer examples of medical scenarios, such as the Doctors Dilemmas web site and the Clinical Medical Science Online Study Guide (provided by the University of Dundee). Scenarios are used with adults in a number of ways.

Scenarios are a type of case study, but not in the traditional sense. So, many of the benefits that case studies provide are the same benefits that scenarios provide. Because scenarios are not as long, it usually does not take as long for students to understand, analyze and evaluate what is occurring or what should be occurring.

Examples of scenarios can be found in the use of the problem-based learning model, which “is concerned with both what students learn and how they learn it, and uses specially prepared problems, usually written cases derived from clinical experience, as the basis of the curriculum” (Bligh, 1999, p. 3). Problem-based learning was started and developed by Howard Barrows at McMaster University Medical School in the late 1960’s. Since then, problem-based learning has been used successfully in medical

schools and in other professions. Even though Bligh refers to cases in his definition, the examples provided are extremely short (e.g. one or two paragraphs), unlike traditional written cases, which are usually at least a few pages long. For example, the following is the sample case he provides in the text:

A 55-year old woman lies crawling on the floor in obvious pain. The pain emerged in waves and extends from the right lumbar region to the right side of the groin and to the front of the right leg. (Bligh, 1999, p. 4).

Problem-based learning has been used successfully in medicine, but has been used also in many “teaching settings including architecture, nursing, engineering, and social work” (Bligh, 1999, p. 4). The problem-based method differs significantly, however, to the Generative Learning Model, which is being considered in this study. The problem-based method “uses tutorial discussion groups supplemented by traditional teaching methods to stimulate active learning on the parts of the students. The problems chosen are derived from clear course objectives and are sensitive to the level of sophistication of the student at different stages of training” (Bligh, 1999, p. 4). The Generative Learning Model may or may not use tutorial groups, but there is some form of guidance, or direct instruction from the instructor, and a focus on generating knowledge and understanding, based in part, on students’ previous experiences.

The term “vignette” actually originated from the term “vinette,” used before 1420, meaning “a trailing ornament in architecture or decorative work” (Barnhart Dictionary, 1998, p. 1204). This term did not take on the meaning of a literary sketch, or short verbal description, until 1880 (Barnhart Dictionary, 1998). More recently, the term “vignettes” has been used interchangeably with a number of terms describing case studies, case



stories, and scenarios. Case studies have also been referred to as “research vignettes” (Freiberg & Driscoll, 2000, p. 311). Driscoll and Freiberg note that case studies “provide for rich descriptions of single subjects” and that Carl Rogers, one of the founders of humanistic psychology, used case studies in the 1940’s (p. 311). The term “vignettes” has been used interchangeably with the term “scenarios” (Dede, 1998; Fogarty, 1997, pp. 28-29). Vignettes are defined as stories that are “a short, descriptive literary sketch” or “a brief incident or a scene (as in a play or movie)” (Merriam-Webster Online Dictionary, 2004). Frederick Erickson says, “The narrative vignette is defined as a vivid portrayal of the conduct of an event of everyday life, in which the sights and sounds of what was being said and done are described in the natural sequence of their occurrence in real time. The moment-to-moment style of description in a narrative vignette gives the reader a sense of *being there* in the scene” (1986, pp. 149-150).

Research on the use of all of these narrative forms, case studies, case stories, scenarios, and vignettes, will be discussed in the “Using Vignettes to Teach Adults” section.

### Online Learning

Online learning is one type of distance education. McIsaac and Gunawardena discuss the significance of electronic networks and distance learning technologies, and state, “Distance education, structured learning in which the student and instructor are separated by time and place, is currently the fastest growing form of domestic and international education” (McIsaac & Gunawardena, 1996, pp. 403). Garrison (1990, p. 45) points out the significance of technology to distance education:

Computer-based learning in conventional educational classrooms has made few inroads because of its primary use as an adjunct to traditional methods, and as such, it is seen simply as another added responsibility for the teacher. In distance education, however, technology is an essential component of the transaction and distance educators are generally open to new approaches to provide better access and support for learning at a distance. And in distance education, as in society as a whole, the microprocessor has created much excitement with its potential to access and process information. ... Distance educators have in many cases become the true innovators with regard to the educational application of computer-based technological systems. The potential for worthwhile applications of computer-based technology is virtually unlimited in distance education.

Extension courses were the first type of distance learning courses. Professor Benjamin Silliman of Yale College gave a course of lectures in natural science in New Haven in 1830, and by 1859 he was giving the same course in areas such as Pittsburgh and New Orleans – this was the beginning of the university extension. As a result of the university extensions begun by English universities in the early part of the nineteenth century, American universities such as Johns Hopkins University and the University of the State of New York (1887 and 1891, respectively) began their own university extensions (Knowles, 1960, p. 18).

Picciano (2001, p. 8) notes that in the mid-nineteenth century, as postal services developed and more people learned how to read and write, so did the first formal distance

learning programs. Evidence of correspondence courses held in Sweden, Germany, and England in the 1830's was found; in fact, Isaac Pitman was noted for a successful correspondence course he established in the 1840's (Holmberg, 1986, p. 7; Picciano, 2001, p. 8).

In America, in 1874, the Chautauqua Institution was founded, where summer educational programs were held for adults. Out of this program evolved the Chautauqua Literary and Scientific Circle (CLSC), which provided a home study program with literary circles focused on reading and literature. This home study program inspired William Rainey Harper, who in 1892, as president of the University of Chicago, established a correspondence division in the extension department of the university (Knowles, 1960, p. 16). Harper helped to establish one of the first degree programs by correspondence in 1883 at Chautauqua College of Liberal Arts in New York. Later, in the late 1800's, at the University of Chicago, "the first major correspondence program in the United States was established in which the teacher and learner were at different locations" (McIsaac & Gunawardena, 2004, p. 356). Before this time, especially in Europe, education was available primarily to "males in higher levels of society" (pp. 356-357). Originally, "correspondence study, which was designed to provide educational opportunities for those were not among the elite and who could not afford full time residence at an educational institution, was looked down on as inferior education" (McIsaac & Gunawardena, 2004, p. 357). Other successful distance learning programs were established at the University of Wisconsin (1885), the International Correspondence Schools (1891), and the Pennsylvania State University (1892) (Picciano, 2001, p. 8).

In the early part of the 20<sup>th</sup> century, primary and secondary educational institutions were developing correspondence and home study programs as well (Picciano, 2001, p. 9). Some examples include the Calvert School in Baltimore (1906), Benton Harbor, Michigan (1923), and the University of Nebraska (1929) (Picciano, 2001, p. 9).

Technologies such as the radio, which was developed around the time of World War I, and television, which was developed during the 1950's, were eventually used in the traditional classroom to link students to the outside world (McIsaac & Gunawardena, 2004). In the 1920's, the University of Wisconsin, the State University of Iowa, and Ohio State University were examples of those educational institutions that used the radio to enhance their educational programs (Picciano, 2001, p. 9). In the 1950's, Purdue University, Kansas State University, and New York University were among the first universities to use television in distance learning (Picciano, 2001, p. 9).

From the late 1960s through the 1980's several networks and other online technologies essential to online learning today were developed to assist in communication within and outside of universities and other educational institutions.

In the 1960's, the development of various networks that would eventually develop into the Internet and the World Wide Web began, providing several educational opportunities. In 1963, PLATO, a computer-assisted instructional system, began with Control Data Corporation and the University of Illinois via a grant from the National Science Foundation to develop its technology and content (PLATO Learning web site, 2004). This was the first example of an educational use of a computer network (Harasim et al., 1995). In 1969, the Open University in Britain, which allowed for correspondence studies at the university level, was one of the first distance learning courses that

incorporated different forms of technology (McIsaac & Gunawardena, 2004). Also, in 1969, ARPANET (Advanced Research Projects Agency Network), a network developed by the U.S. government, was “limited to military and contracts and universities working on defense research” (Harasim, Hiltz, Teles, & Turoff, 1995, p. 6). BITNET (Because It’s Time Network) and CSNET (Computer Science Network) were “launched in the early 1980’s to provide nationwide networking to the academic and research communities” (Harasim et al., 1995, p. 6). BITNET was “used for e-mail and listservs (Kristula, 2001, chap. 1974-1983, p. 1). In 1986, the American NSFNet (National Science Foundation Network) was created by linking five supercomputer sites in the United States, including JVNC@Princeton, SDSC@UCSD, NCSA@UIUC, and Theory Center & Cornell (Zakon, 2004). This provided an “explosion of connections, especially from universities” (Zakon, 2004, p.9).

In the 1990’s, there were significant changes to make the Internet more user friendly. In 1992, Internet Society was chartered and the World Wide Web was released by CERN. In 1994 and 1995 more networks were added to the NSF, the “backbone” of the Internet, and “hundreds and thousands of new hosts were added to the Internet” (Kristula, 2001, chap. 1991-1995, p. 2). In 1995, the National Science Foundation sold off the “NSF backbone” to companies that would be the new providers or independent Internet Service Providers, such as MCI, AT&T, Sprint, and UUnet (Kristula, 2001, chap. 1991-1995, p. 2; chap. 1996-Present, p. 1). As a result, Internet access became widely available to individuals.

In 1972, Ray Tomlinson created the first e-mail program (Kristula, 2001, chap. 1957-1973, p. 2). In the early 1970’s, e-mail was used for academic information

exchange; however, by the late 1970's, e-mail also supplemented university-level courses (Harasim et al., 1995). At this time teachers and learners from kindergarten through twelfth grade were using e-mail applications for writing and research projects (Harasim et al., 1995). Currently, many people not only have e-mail addresses at school and at work, but at home as well.

In 1978, Ward Christensen and Randy Seuss were given credit for creating the first bulletin board system for personal computers (Harasim et al., 1995). Harasim et al. explain, "The first bulletin boards had only one common space or "board" for posting public messages and allowed only one user to be connected at a time" (1995, p. 7). By the early 1990's there was significant growth in the bulletin boards available to the public. "With rapid transformation of bulletin board software into better-designed and faster systems, the public acceptance of bulletin board systems led to the existence of around 30,000 boards by 1990 in the United States alone and tens of thousands in Canada and overseas" (Harasim et al., 1995, p. 7). This is the same technology used in the development of asynchronous discussions, which take place over a network. Picciano defines asynchronous learning network as "a form of distance learning that uses computer networking technology, especially the Internet, for instructional activities" (2001, p. 241).

In 1985, schools such as the Ontario Institute for Studies in Education (OISE, University of Toronto) and Connected Education (affiliated with the New School for Social Research, New York) offered the first graduate online courses (Harasim, 2000, p. 48). McIsaac and Gunawardena note that developing technologies were used to provide "more effective distance education" after the establishment of the Open University in Britain and Charles Wedemeyer's "innovative uses of media in 1986 at the University of

Wisconsin” (McIsaac & Gunawardena, 1996, p. 404). Due to teacher shortages in science, math, and foreign language, as well as mandates to reach rural schools, “there was a rapid growth of commercial courses such as those offered via satellite by the TI-IN network in Texas and at Oklahoma State University. Fewer than 10 states were promoting distance education in 1987. A year later, that number had grown to two-thirds of the states, and by 1989 virtually all states were involved in distance learning programs” (McIsaac & Gunawardena, 2004, p. 357).

The 1990’s saw a dramatic increase in the number of institutions interested in providing online learning opportunities within their traditional programs. Gunawardena and McIsaac write, “The 1990s saw a rapid rise in the number of institutions wanting to offer network-based flexible learning through traditional programs. As they looked at the potential market and at the growth of online degree programs using a commercial portal, a conceptual battle began between the for-profit and non-profit providers” (2004, p. 357).

Since 2000, studies have been conducted to understand how the Internet has and should transform education. For example, the Bipartisan Web-based Education Commission was established by Congress in 1998; this same commission provided a report in 2000 entitled “The Power of the Internet for Learning,” which stresses the importance of having online learning a significant part of the nation’s education policy. Then the “Internet Equity and Education Act of 2001” was written to repeal the rule that required schools to provide at least 50% instruction face-to-face and the “12-hour” rule that “requires students enrolled in classes that do not span a typical quarter or semester to spend at least 12 hours per week in class. The bill would allow students to use federal

loans to pay for a college education delivered entirely over the Internet” (Gunawardena & McIsaac, 2004, p. 357).

This section described the history of the technologies considered in the online course for this study. The next section focuses on the historical contributions to higher order thinking and academic achievement for adults.

### Higher Order Thinking and Academic Achievement

This section provides a background on academic achievement, and how each of these components has been considered, especially since the Taxonomy of Educational Objectives.

Traditionally, academic achievement relied upon an instructor’s evaluation of student’s knowledge of a specific content area. Popham explains, “For most educators, indeed, the idea of evaluation was essentially equivalent to the idea of testing” (1993, p. 1). Ralph W. Tyler, who inspired Bloom and his colleagues in writing the Taxonomy of Educational Objectives, worked with his colleagues and helped lay “the foundation for thought about school-developed educational achievement and for the domain of action in educational development and improvement” (Baker & Niemi, 1996, p. 927). Tyler and his colleagues are known for the Eight-Year Study, which facilitated “the staff in formulating educational objectives and then assisting them in developing assessment techniques to measure them,” and was reported later in *Appraising and Recording Student Progress* (Madaus & Stufflebeam, 1989, p. 89). This same study led Tyler to write *Basic Principles of Curriculum and Instruction* in 1949 (Baker & Niemi, 1996, p. 927), where Tyler specified educational purposes for schools, how learning experiences can help students attain specific objectives, criteria for effective organization, how



learning should be evaluated, and curriculum building. Later, in 1956, Bloom and his colleagues elaborated on Tyler's work, which is the reason why Bloom and his colleagues dedicated the Taxonomy to him (Airasian, 1994, p. 82). Airasian notes that in the middle 1950's standardized norm-referenced tests and teacher-made classroom tests were the two main methods of gathering information on students (1994, p. 85).

It was not until the 1960's, when programmed instruction and federally mandated evaluations of compensatory education programs emerged, that the importance of behavioral objectives was taken seriously. Individuals such as Hoffman, Holt, and Silberman criticized standardized tests by questioning their validity (Airasian, 1994, p. 86). Hoffman wrote *The Tyranny of Testing* (1962) in which he questions the validity of tests that don't require students to explain their reasoning but rather are capable of discouraging "the right habits of the true student, and to discriminate against the original in favor of the routine mind" (p. 11). In *The Underachieving School* (1968), Holt devotes an entire chapter to explain the disadvantages of testing. According to Holt, "At best, testing does more harm than good; at worst, it hinders, distorts, and corrupts the learning process.... Our chief concern should not be to improve testing, but to find ways to eliminate it" (p. 53). In 1970, Silberman wrote *Crisis in the Classroom*, in which he points out, among other things, that there is a definite misuse of standardized tests (p. 140).

Holt knew that tests should be developed so that people can show their professional abilities so that they can meet professional standards in an occupation; that is, tests that could measure an individual's mastery of a certain skill or subject (Airasian, 1994, p. 86). In the early 1960's, Glaser had proposed criterion-referenced tests, which

focused on comparing a student's performance against a set of standards, or "a well-defined domain of behavior" (Airasian, 1994, p. 88). Robert Mager's book, *Preparing Instructional Objectives*, successfully explained how to state objectives "within the programmed instruction framework" (Airasian, 1994, p. 86). Airasian notes that "Measurement, evaluation, and assessment textbooks from the 1960's to the present emphasize the distinction between lower- and higher-level objectives and test items" (Airasian, 1994, p. 90). Popham (1993, p. 13) explains that one example of this is the concept of formative and summative evaluation, which was defined and differentiated by Michael Scriven in his work, *The Methodology of Evaluation*, published in 1966.

In the 1970's, there was a considerable increase in curriculum evaluation. In fact, there was an increase in statewide assessments; that is, "federal concern for measuring the performance of school children was mimicked at the state level" (Airasian, 1994, p. 92). In the 1970's, there was also an emphasis on "assessing pupil learning that was implemented under a variety of names: educational accountability, performance-based education, learner verification models, performance contracting, objectives-based education, and competency-based education" (Airasian, 1994, p. 93). Gagne considered the Taxonomy and developed a "different kind of taxonomy, one based upon conditions and strategies of learning" (Airasian, 1994, p. 87). The eight types of learning Gagne identified included signal learning, stimulus-response learning, chaining, verbal association, multiple discrimination, concept learning, principle learning, and problem solving, for which Gagne also described the conditions that produced those types of learning (Gagne, 1965, pp. 33-57).

In the 1980's, the standardized tests resulting from statewide assessments continued, but now "high stakes" was associated with test performance. This was partly a result of American pupils ranking last on international achievement test that covered many subject areas. This was also a result of the National Commission on Excellence in Education report that "Scholastic Aptitude Test scores had declined yearly between 1963 and 1980" (Airasian, 1994, p. 94). Airasian explains that this type of testing, where achievement was measured by multiple-choice paper-and-pencil tests, goes against the visions of Tyler and Bloom, where different procedures for measuring achievement were supported (1994, pp. 95-96).

There was a significant movement toward accurate and appropriate assessments in the 1990's. "Standards, assessment, accountability, and grading – these are the issues that dominated discussions of education in the 1990's. Today they are at the center of every modern education reform effort" (Reeves, 2002, p. xi). "In the 1990's, more educational assessments are 'performance based'; that is, they require students to complete tasks such as writing essays, conducting experiments, preparing portfolios, or providing written answers to problems. These new assessments are more likely to measure higher level cognitive skills than educational assessment of the past – or at least that is the expectation of many educational reformers" (Hambleton, 1996, p. 899). Gipps, a trained psychologist, test developer, and qualified teacher in the United Kingdom (General Teaching Council for England web site), explains that the measurement of achievement concerns itself "with current levels of performance not prediction, and there is a concept of a continuum of knowledge acquisition ranging from no proficiency at all

to perfect performance: a student's achievement on the test indicates his/her performance in relation to the criteria which articulate the continuum" (1994a, p. 79).

Hambleton notes that "the direction for assessment practices in the 1990's and into the foreseeable future seem clear; more performance assessments, assessments closely linked to classroom instruction and looking very much like classroom activities, more focus on the assessment of higher level cognitive skills, and reduced use of multiple-choice test items" (Hambleton, 1996, pp. 899-900). This trend was also noted by other researchers (Wiggins, 1989; Frederiksen & Collins, 1989; Nickerson, 1989). "The main impetus for changes in assessment, as well as for changes in school organization, curricula, teacher training and so forth, is coming from educational policymakers at the national and state levels who hold the view that schools are not doing the job they should be doing" (Hambleton, 1996, p. 900).

Who is the Adult Learner?

#### General Needs and Characteristics

According to Brookfield (1986, p. 30), there are four characteristics of adult learners:

1. Adults have multiple roles and responsibilities
2. Adults have accumulated many life experiences
3. Adults pass through a number of developmental phases in the physical, psychological, and social spheres
4. Adults experience anxiety and ambivalence in their orientation to learning

In her book, *Adults as Learners*, Patricia Cross presented the Characteristics of Adults as Learners (CAL) model that considered two variables: personal characteristics

and situational characteristics of the learner. The personal characteristics of the learner include age, life phase, and development stage. The situational characteristics of the learner are part-time vs. full-time learning and voluntary versus compulsory learning.

The adult learner is different from a pre-adult, or child, due to his or her needs, circumstances in life, and ultimate goals. Knowles (1970, p. 39) differentiates the needs of an adult learner and the needs of a child learner by explaining the basic assumptions of andragogy, where as a person matures:

1. His self-concept moves from one of being a dependent personality toward one of being a self-directing human being
2. His accumulation of a growing reservoir of experience becomes an increasing resource for learning
3. His readiness to learn becomes oriented increasingly to the developmental tasks of his social roles
4. His time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem-centeredness

Johnson and Bragar (1997, p. 336) note the following two significant differences between adult learners and children:

1. Adults have much more numerous, complex, and intransigent belief systems than small children, so changing any one of these beliefs or systems is not easy.
2. Adults also demand, even more than children, to feel in control of their own learning and to understand the practical results that they can hope to realize.

Adults want to take what they are learning in a training experience and use it the next day (or the next minute, for that matter) on the job.

### Characteristics and Needs for the Population of this Study

In previous studies (Kasworm & Pike, 1994, Kim, 1999) the adult learner was defined as an individual who is at least 25 years of age; in both of these studies, the adult learners were college students. This study focused on non-traditional students who have other responsibilities aside from attending classes and who are pursuing a graduate degree. Therefore, for the purpose of this study, the adult learner will be defined as an individual who is at least 23 years of age who is a non-traditional student pursuing an advanced degree with one or more of the following responsibilities: working full-time or part-time, raising and/or supporting a family, and taking care of elderly parents or relatives.

Dottin and Weiner (2001, pp. xiii-xvi) write that educators, whether classroom teachers or trainers, have a number of learning needs in order to become more effective instructors:

- Making sense of the world of teaching and thereby increasing the possibility of their improving that world
- Performing a critical analysis, which includes “critically analyzing situations, and generate multiple interpretations, and the ability to formulate deliberate action plans that result from critical analysis” (p. xiii)
- Problem solving
- Analyzing

- Generating “local knowledge *of* practice by working within the context of inquiry communities to theorize and construct their work and to connect it to larger social, cultural, and political issues” (p. xvi).

This review considers the following types of characteristics and needs of adult learners at a graduate level: personal, academic, and professional. There are two groups of graduate level students: traditional students, who pursue a graduate degree immediately following the undergraduate degree, and non-traditional students, who pursue the graduate degree after spending a certain amount of time in the workforce. There has been research done on traditional learners (Martin & Johnson, 1999), but the literature review will focus on nontraditional students.

Martin and Johnson (1999) provide information on personal characteristics and needs of non-traditional graduate students. They note that non-traditional graduate students could initially demonstrate a high anxiety level about their own academic study due to their being unaccustomed to academic work as well as experience higher levels of stress in their personal lives, due to expectations of job and family. However, once these students have studied and worked through a few classes and realized their success, they become highly committed and highly goal-oriented (p. 101). Finally, they note that mature learners are “politically” savvy in that they realize how to use their energy so that they can do the academic work and still handle the complexities of their professional and personal lives (p. 102).

In a post-degree learning needs study, Thompson (1997) found that lack of time was a major obstacle to participation in formal structured learning activities for most Education graduates. Out of 164 survey questionnaires, respondents from the University

of Regina and the University of Saskatchewan graduate schools of education, 60.4% were full-time teachers and 13.4% part-time; 63.4% were female; the largest proportion (34.8%) of survey respondents were in the 46 to 55 age range; the largest proportion of survey respondents came from the west central (20.7%) and southeast (20.7%) areas of Saskatchewan; slightly more than half of the respondents (58.5%) lived in cities; and 63.4% had children at home (pp. 7-8). "Education graduates participate in learning activities for many reasons, with becoming more skilled at one's present job, and personal growth and satisfaction topping the list" (Thompson, 1997, p. i).

Moore and Bogotch (1993) observed a similar characteristic in non-traditional students in their mid-careers in the field of educational administration: they wanted "to grow professionally, discover new talents, and build on their previous experiences" (p. 21).

Regardless of prior teaching experience, non-traditional graduate students 1) realized the importance of gaining more insight and developing a theoretical framework for what they do in the classroom, 2) brought insights from their teaching experiences to the graduate courses, raising the level of sophistication in the classroom as a result, and 3) sometimes required additional individual attention to meet the instructor's expectations for assignments and at times had to negotiate with the instructor on these expectations, due to outside commitments (Martin & Johnson, 1999). Moreover, education graduates participate in informal learning activities, (reading, watching TV and videos), more frequently than they do in formal structured classes (Thompson, 1997, p. i). Even though academic university courses are an important means of learning for most education graduates, learning is a major theme that permeates all of their life choices. Education



graduates report that the types of learning that are most important to them for the next five years in terms of their personal and career plans are reading, discussion or study groups with others, independent learning on the computer, and graduate courses in education (Thompson, 1997).

Evans and Miller (1997) studied how closely the characteristics of graduate students in educational leadership and higher education administration programs matched the characteristics typically mentioned in adult learning theory. The educational leadership program students identified most strongly with the following statements: “adults may be impatient with courses and outlines that seem unrelated to their needs,” “adults respond positively to learning in which the information has some personal meaning,” and “adults learn best when they are active participants in the learning process” (Evans & Miller, 1997, p. 10). Higher educational administration program students identified with: “adults have a great number of varied experiences upon which to add new information,” “adults respond positively to learning in which the information has some personal meaning,” and “adults see themselves as self-directed individuals capable of managing their own lives” (Evans & Miller, 1997, p. 10).

Thompson (1997) studied the professional characteristics of adult learners and found out that of her sample population, 80.5% were satisfied with their employment, 43.3% said that their employment situation was better than it was five years ago, and 37.2% said that their employment situation was neither better nor worse than five years ago (p. 8). Becoming more skilled at one’s present job and growing professionally were two important characteristics for this population as well (Thompson, 1997; Moore & Bogotch, 1993).

Several of the characteristics and needs of adult graduate students previously noted could be considered motivational factors. The motivation of adult learners falls into one or more of the following categories: personal, educational, and professional advancement. These are very similar to the categories considered for adult learners' characteristics and needs. Age and gender also have an impact on motivation, particularly among adult learners pursuing graduate degrees in education and adult learners in teacher training programs.

Beitler (1997) investigated the experiences of mid-career adults in self-directed graduate programs and found three primary motivations for adult learning: learning to meet "career advancement goals or training needs, learning for interpersonal effectiveness, and learning for the sake of learning" (p. 13). He noted that all of the adults in this program had all three needs, but depending on where they were in adulthood, the emphasis was different.

Evans and Miller (1997) considered the relationship between age and motivation by observing graduate students 51 to 60 years old and observed:

[They] may perceive a certain degree of self-empowerment without job-related pressure. The general perception is that older students are gaining a broad exposure to knowledge for personal efficacy rather than skills mastery for application to a professional career. This need for personal development is consistent with the notion that adults have an intrinsic need to evolve and grow (p. 13).

Evans and Miller also noted that the graduate school experience is unique due to a number of reasons, such as “individualized attention, human and financial resources, access to academic holdings, and tradition” (Evans & Miller, 1997, p. 4).

Kopka and Peng (1993) surveyed the educational activities of adults in the United States and found that age, sex, race/ethnicity, and educational attainment were highly correlated with motivation to learn. For example, younger adults were “more likely than older adults to participate in adult education to get a diploma or degree, to train for a new job or career, or to improve basic skills” (Kopka & Peng, 1993, p. 2). The researchers however did not find any clear differences among age groups concerning adults’ interests in improving their personal, family, or social life. These two findings suggest an inverse relationship between age and motivation to learn that does not carry over to motivation to improve one’s life.

Gordon (1992) compared the motivational orientations of adult and vocational education graduates to determine the motivation for participation in off-campus credit programs and found that the professional advancement factor was the greatest motivator for the adults to enroll in adult and vocational education courses.

Thompson (1997) interviewed students who had received their undergraduate degrees and found career advancement was the most common reason for pursuing a higher degree. A master’s degree helps to keep as many doors as possible open, allowing adult students to become more skilled in their work and to achieve personal growth and satisfaction, and weaves together their career and personal motivations.

Ryan (1995) noted that teachers who do not feel fulfilled in their teaching careers often pursue education outside of school to find personal self-fulfillment or to be

recognized for their achievements, suggesting that an adult's motivation to learn is not confined to traditional graduate school programs.

### Theories and Research Related to Learning and Academic Settings

Several adult learning theorists provide insight into what comprises an ideal learning environment for adults. According to Knowles (1970), the following should be considered when developing a learning environment for adults:

1. "Adults have a need to be treated with respect, to make their own decisions, to be seen as unique human beings" (p. 40). Therefore, the physical and psychological climate should be one in which adults feel at ease in learning new things. Adult learners need to be involved in designating their own needs for learning by evaluating where they are in the learning process at that point. Teachers should allow students to take part in planning the learning activities, make sure there is a mutual understanding that the "learning-teaching transaction is the mutual responsibility of learners and teacher" (p. 43), and include learner-self evaluation in the final evaluation of the student's performance (pp. 40-43).
2. "Every adult enters into any undertaking with a different background of experience from that of his youth" (p. 44). Therefore, because adults have many more resources of experiences to draw from, learning experiences should tap the learner's experiences, demonstrate practical application of the skills and knowledge learned, and involve having students "look at themselves more objectively and free their minds from preconceptions" (p. 45).

3. The development and needs of the adult learner varies with his or her social role. Therefore, the “sequence of the curriculum must be timed so as to be in step with his developmental tasks” (p. 47) and the grouping of adult learners should be based on their developmental needs (pp. 47-48).
4. Adults “tend to have a perspective of immediacy of application toward most of their learning” (p. 48). Therefore, the adult educator must “be primarily attuned to the existential concerns of the individuals and institutions he serves and be able to develop learning experiences that will be articulated with these concerns” (p. 48), organize sequences of adult learning according to problem areas and not subjects, and consider the problems or concerns the adult learners have on their minds when they begin a course (1970, p. 49).

Knowles (1970, pp. 52-53) lists “superior conditions of learning” for adult learners:

1. The learners feel a need to learn
2. The learning environment is characterized by physical comfort, mutual trust and respect, mutual helpfulness, freedom of expression, and acceptance of differences
3. The learners perceive the goals of a learning experience to be their goals
4. The learners accept a share of the responsibility for planning and operating a learning experience, and therefore have a feeling of commitment toward it
5. The learners participate actively in the learning process
6. The learning process is related to and makes use of the experience of the learners

7. The learners have a sense of progress toward their goals

Jane Vella expands on Knowles' theory by presenting several principles, also considered in this study, to help maintain and nurture dialog between adult learners and teachers (1994, pp. 3-4):

1. Needs assessment: participation of the learners in naming what is to be learned
2. Safety in the environment and process
3. A sound relationship between teacher and learner for learning and development
4. Careful attention to sequence of content and reinforcement
5. Praxis: action with reflection or learning by doing
6. Respect for learners as subjects of their own learning
7. Cognitive, affective, and psychomotor aspects: ideas, feelings, actions
8. Immediacy of the learning
9. Engagement of the learners in what they are learning
10. Accountability: how do they know what they know?

This list also included the following, which will not be considered for this study: clear roles and role development and teamwork: using small groups.

Brookfield (1986, pp. 9-11) presents "six central principles" in facilitating learning for adults, four of which are considered for this particular study:

1. Effective practice is characterized by a respect among participants for each other's self-worth
2. Praxis is placed at the heart of effective facilitation

3. Facilitation aims to foster in adult a spirit of critical reflection
4. The aim of facilitation is the nurturing of self-directed, empowered adults

The two other central principles, participation in learning is voluntary and facilitation is collaborative, will not be considered for this study.

It has been noted that adult learners should be engaged in their learning.

According to Jones, Valdez, Nowakowski, and Rasmussen (1994), the vision of engaged learning involves four main components:

1. Students are *responsible for their own learning*; they take charge and are self-regulated. They define learning goals and problems that are meaningful to them; they have a big picture or blueprint to how specific activities relate to those goals; and, using standards of excellence, they evaluate how well they have achieved the goals(s)” (p. 11).
2. “Successful, engaged learners are *energized by their learning*. They derive excitement and pleasure from learning so that it is typically intrinsically motivating and yields a lifelong passion for solving problems.” This also leads them to go on to more research and “creative production” (p. 11).
3. “Learners are *strategic*; they know how to learn because developing and refining learning and problem-solving strategies are ongoing for them... Strategic learners can apply and transfer knowledge to solve problems creatively as well as make connections at different levels”(p. 11).

Jones et al. also include (1994, p. 12) collaboration; however, because this study does not focus on collaboration, this component is not considered for this review.

More recently, the Forum Corporation, which focuses on custom training products, has developed principles of adult learning. Forum's principles of adult learning (Johnson & Bragar, 1997, p. 340) include the following:

- *Learning is a transformation that takes place over time*
- *Learning follows a continuous cycle of action and reflection*
- *Learning is most effective when it addresses issues that are relevant to the learner*
- *Learning is most effective when people learn with others*
- *Learning occurs best in a supportive and challenging environment*

Tough, who extended the work of Houle, noted the different motivational stages adults go through when working on projects and that by helping the adult learner at each phase the learner could improve their learning effectiveness (Knowles, 1978, pp. 46 - 47). In 1979, Tough, Abbey, and Orton asked learners to assign weights to their reasons for learning, proposing a model that defined five stages at which benefits might be anticipated by adult learners:

1. *engaging* in a learning activity to
2. *retaining* the knowledge or skill to
3. *applying* the knowledge to
4. *gaining in a material reward* as in a promotion, or
5. *gaining a symbolic reward*, as in credits and degrees.

At each stage anticipated benefits might be classified into three clusters of personal feelings: pleasure (happiness, satisfaction, enjoyment, feeling good), self-esteem (regarding self more highly, feeling more confident,



maintaining self images), and a category labeled “others” (others regard individual more highly, praise him like him, feel grateful)” (Cross, 1981, p. 121).

Other individuals who developed theories of motivation and applied them to the classroom are Kolb (1984) and Wlodkowski (1999). Kolb (1984, p. 30) explained that learners need the following abilities to be effective:

- Concrete experience abilities, where the learners involve themselves “fully and openly without bias in new experiences”
- Reflective observation abilities, where the learners “reflect on and observe their experiences from many perspectives”
- Abstract conceptualization abilities, where the learners “create concepts that integrate their observations into logically sound theories”
- Active experimentation, where the learners “use these theories to make decisions and solve problems”

Wlodkowski (1999) adapted his theories on what motivates adult learners to the classroom environment. His Motivational Framework for Culturally Responsive Teaching “dynamically combines the essential motivational conditions that are intrinsically motivating for diverse adults” (pp. 79-80). It provides a structure for planning and applying a rich array of motivational strategies. Each of its major conditions is supported by numerous theories and related research that document each condition’s powerful influence on learner motivation. Wlodkowski (1999, p. 83) presents four questions that instructors need to ask when designing courses:

1. *Establishing inclusion*: How do we create or affirm a learning atmosphere in which we feel respected by and connected to one another? (Best to plan for the *beginning* of the lesson.)
2. *Developing attitude*: How do we create or affirm a favorable disposition toward learning through personal relevance and choice? (Best to plan for the *beginning* of the lesson.)
3. *Enhancing meaning*: How do we create engaging and challenging learning experiences that include learners' perspectives and values? (Best to plan *throughout* the lesson.)
4. *Engendering competence*: How do we create or affirm an understanding that learners have effectively learned something they value and perceive as authentic to their real world? (Best to plan for the *ending* of the lesson).

Conversing and relating with others and reflecting upon both past and new learning experiences are two significant parts of the learning process for adults.

Daloz describes the importance of dialog and mentoring for adult learners in the book, *Effective Teaching and Mentoring*. Daloz explains that adults need to realize where they are going and how teachers can help them in their journey (1986, p. 3).

Ron and Susan Zemke (1988) suggested several discussion and information sharing activities they believe help adults learn. First, adult learners should clarify and articulate their expectations and objectives before getting into the content of the course, and be allowed to bring their life-experiences into the classroom. To do this, educators of adult learners can use open-ended questions to draw out relevant student knowledge and experience. New knowledge needs to be integrated with previous knowledge so that

students must actively participate in their learning. There should also be a balance among the presentation of new material, debate and discussion, and sharing of relevant student experiences. Finally, transition time that emphasizes application should be provided so that new knowledge and skill can be integrated.

Dempsey (2000) highly recommended requiring students to keep journals throughout the course. By doing so, an instructor could “track students’ knowledge from its rawest to most refined moments,” [journals also provide] “rich insight into the underlying group dynamics that are not visible to the naked eye” (Dempsey, 2000, p. 136).

Another important goal for adult learners is developing life long learning skills, such as metacognition and self-directed learning (Dunlap, 1996). “Life-long learning skills, specifically metacognitive and self-directed learning skills, need to be developed if educators intend for their students to stay current in their fields. Staying abreast of new innovations, research, techniques, and information is a prerequisite for successful decision-making and problem-solving on-the-job” (Dunlap, 1996, pp. 15-16).

In 1997, Duncan and Clayburn held a descriptive, qualitative study that was based on open-ended interviews with 10 students from the previous 3 years. They confirmed the following effective teaching practices: requiring students to write reflective journals on class readings (pp. 5-6, 12-14); accepting students’ experiences by assigning case stories appropriate to the class’ focus and providing feedback on the stories that “underscore the value of what they already know” (pp. 8-9); and helping learners become active in their learning and in sharing the responsibility of determining their own assessment (pp. 10-13).

Freiberg and Driscoll (2000, p. 328) explain that student reflection can be supported in a learning environment in the following ways:

1. Develop a *context* for teaching and learning that supports learners as active participants in their own education. The development must attend to a *climate of trust* and the dimensions of *constructivism*.
2. Provide experiences that promote the *learners'* abilities to take responsibility for learning. Support them in a *shareholder* role by providing opportunities for input in planning, during instruction, and in assessment. *Expand their experiences and participation* through the strategies of active participation, brainstorming, and mapping.
3. Provide experiences that teach the *content* of inductive and critical thinking, and problem solving.
4. Use the reflective teaching strategies of *inquiry* and *guided discovery*.

For the purpose of this study, the Generative Learning Model, the use of vignettes, and the online learning environment were considered for the primary set up for the Instructional Techniques course, because they take into consideration many of the principles and assumptions on adult learning that are provided in the literature. The following section will review the literature that shows how adult learners can be supported and guided in their learning through the Generative Learning model.

### The Generative Learning Model

#### An Overview

The Generative Learning Model, which is a “cognitive model of human learning with understanding” (Wittrock, 1974a, p. 87), was developed by Merlin C. Wittrock,

1974, and is the model that will be considered for this study. The model is influenced, in part, by cognitive theory that “implies that learning can be predicted and understood in terms of what the learners bring to the learning situation, how they relate the stimuli to their memories, and what they generate from their previous experiences” (Wittrock, 1974a, p. 93). Wittrock describes the model as follows: “The model is used to suggest a way to integrate some of the research in cognitive development, human learning, human abilities, information processing, and aptitude treatment interactions around the notion of transfer of experience and abilities” (Wittrock, 1974a, p. 87). That is, the model is based upon neural research, cognitive processes as observed and researched through cognitivism, and how learners process, understand, and transfer information in the classroom.

The model’s fundamental premise is that “people tend to generate perceptions and meaning that are consistent with their prior learning” (1974a, p. 88). The model considers the learner’s previous experiences and motivations for learning so that the learner can actively comprehend new concepts and transfer this understanding to new situations. The objectives of the Generative Learning Model are for the learner to actively participate in the learning process by generating meaningful relationships and transferring learning to new situations. Finally, the Generative Learning Model requires the learner to reflect metacognitively about what he or she has learned.

“Human learning with understanding is a generative process involving the construction of (a) organizing systems for storing and retrieving information, and (b) the processes for relating new information to the stored information” (Wittrock, 1974b, p. 182). According to Wittrock, “Effective instruction causes the learner to generate a

relationship between new information and previous experience” (Wittrock, 1974b, p. 182). Later, Wittrock explains that learning with understanding involves two essential processes of generation: “(a) the process of generating relationships, or structure, among the components, or part of the information one is trying to comprehend and (b) the process of generating relationships between one’s knowledge and the information one is trying to comprehend” (Wittrock, 1985, p. 124). The model focuses on how information can be first stored and retrieved, or recalled from memory, and then related or transferred to new situations. Wittrock notes the importance of transfer as follows:

Transfer designs are one important way to study how the learner, his experience and his cognitive processes, in large part, determine learning with understanding and long term memory. Transfer designs bring the two worlds of psychology together. They also put the active learner foremost in hypotheses about learning and memory, indicating that the effects of instruction are understandable only in terms of what the instruction causes the learner to construct. From my research, it seems that instruction which causes the learner to generate distinctive associations between stimuli and memory facilitates long term recall and understanding (Wittrock, 1974a, p. 94).

Another significant component is metacognition, which “refers to knowledge about, awareness of, and control over one’s cognition... [this] includes thoughts, motivations, and feelings” (Wittrock, 1994, p. 1). Metacognition is considered a critical component of the model, because it refers to the learner becoming more aware of his or her own cognitive processing.

Several benefits result from the use of the Generative Learning Model, such as

- Students are actively engaged in learning (Wittrock, 1974, 1978, 1986, 1991, 2000)
- “Learners of different abilities” can experience an increase in academic achievement by learning how to “manage and control their learning processes” (Wittrock, 1991, p. 178)
- Comprehension is facilitated “without increasing instructional time, cost, or administration, and without the use of complicated or expensive materials” (1991, p. 174)
- Students increase and sustain voluntary attention (Wittrock, 1991)
- Students develop metacognitive skills (Wittrock, 1991, 1994, 2001)

Since its inception, the model has been modified over the years, based on educational research. There are five factors of the model: 1) attention, 2) motivation, 3) knowledge, 4) generation, and 5) metacognition (Wittrock, 2000, p. 210). These are briefly described as follows:

1. Attention is “the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought ... It implies withdrawal from some things in order to deal effectively with others” (James, 1890, p. 261). Attention also “directs the generative processes to relevant text, related stored knowledge, and memory of pertinent experience” (Wittrock, 1990, p. 348).
2. Motivation is defined as “the process of initiating, sustaining, and directing activity” (Wittrock, 1986, p. 304). Wittrock also defines motivation as the

“willingness to invest effort in reading and an ability to attribute success and failure in generating relations to one’s effort” (Wittrock, 1990, p. 348).

3. Knowledge considers the student’s knowledge base and preconceptions to learning, and how these apply to memory (long-term and recall) in the learning process (Wittrock, 1991, pp. 170, 174)
4. Generation is described as follows: students need to generate “meaningful relations 1) between one’s knowledge and experience, on the one hand, and the information to be learned, on the other hand, and 2) among the concepts or parts of the information to be learned” (Wittrock, 1994, p. 15).
5. Metacognition “refers to the learner’s knowledge about and control over their cognitive processes” (Wittrock, 1986, p. 310).

These components, as well as the model, were derived from a combination of neural research and cognitive psychology. Barbara Grabowski, a professor from Penn State University who has used and written about the Generative Learning Model, provides a clear explanation on the origins of the Generative Learning Model:

Generative learning theory, with its companion model, generative teaching, is one such area of blending whose theoretical foundation lies in neural research, research regarding the structure of knowledge and cognitive development, with a focus on selecting appropriate, learner centric instructional activities for the learner. This theory is one that combines the importance of learner and instructional intentionality (Grabowski, 2004, p. 719).



The following sections include the origin of the Generative Learning Model and address the main premises of the model, the neural model significant to the generative learning process, and significant cognitive learning theories and related research as well as their influence on the different components of the Generative Learning Model.

### Background and Theoretical Foundation

#### Cognitive Processes and Components of the Generative Learning Model

One main premise of the Generative Learning Theory is that the learner takes an active role in his or her learning. When introducing learning as a generative process in 1974, Wittrock wrote, “New stress must be placed on the active role of the individual in learning” (1974b, p. 182). In fact, the role of the active learner was “an important facet of the cognitive movement in education” (DiVesta, 1989, p. 54).

The Generative Learning Model is a “functional model that focuses on a) learning processes, such as attention; b) motivational processes, such as attribution and interests; c) knowledge creation processes, such as preconceptions, concepts, and beliefs; and d) most importantly, the processes of generation, including analogies, metaphors, and summaries” (Wittrock, 1992, p. 532). Grabowski provides an explanation on how the cognitive processes of the Generative Learning Model, such as motivational processes, learning processes, knowledge creation processes, and generation processes, work together in the learning process. She explains that motivational processes, which include attribution and interest, activate learning processes, which include attention. Knowledge creation processes include beliefs, preconceptions, and metacognition. Learning

processes and knowledge creation processes determine generation processes

(Grabowski, 2004, pp. 720-721).

### Luria's Neural Model and the Generative Learning Model

Wittrock indicates that the cognitive processes associated with the model are based on Luria's neural model published in 1973 (Wittrock, 1992, p. 533; Wittrock, 2000, p. 208; Grabowski, 2004, p. 720). Luria explains there are three principle functional units of the brain: 1) "unit for *regulating tone or waking*;" 2) "unit for *obtaining, processing and storing information* arriving from the outside world," and 3) "a unit for *programming, regulating, and verifying mental activity*" (1973, p. 43). Wittrock describes these three functional units of the brain as follows: 1) arousal and attention, where "the plans and intentions of the learner, which are mediated by the frontal lobes of the cortex, influence the attention and motivational processes of the brain" (Wittrock, 1992, p. 533); 2) receiving, analyzing, and storing information, where "verbal and spatial, propositional and appositional, and analytic and holistic generative brain mechanisms for learning and understanding information" lie (Wittrock, 1992, p. 534); and 3) planning, organizing, and regulating cognition and behavior," which function together to assist the learner in "metacognitive activities [that] reflect higher order, sophisticated generative processes" (Wittrock, 1992, p. 534). Grabowski developed a cognitive map illustrating how the main three functioning units of the brain, included in the frontal lobes of the cortex and reticular activating systems, are linked with the motivational, learning, megacognitive, and generation processes that are a part of the Generative Learning Model (Grabowski, 2004, pp. 721-722).

### Research on the Generative Learning Model Components

Even though there are five significant components in the generative learning model, they are all related via the cognitive processes that take place within the learner. As specified previously, Grabowski showed how these different components were related to cognitive processes, and how these cognitive processes were in turn related to one another. The following sections include relevant research done since the inception of the Generative Learning Model and how this research relates to the components of the Generative Learning Model.

#### Attention.

As indicated previously, attention is important in directing and sustaining activity. Wittrock explains the importance of explaining behavioral objectives and adjunct questions, or “questions embedded or inserted into text either before (pre) or after (post) the facts or concepts to which they refer” (Wittrock, 1978, p. 18). In the Generative Learning Model, attention is “useful for explaining classroom learning” (Wittrock, 1988, p. 290). Wittrock notes, “objectives have been found to direct attention, at least in some situations” (Wittrock, 1978, p. 18).

Research on cognitive dissonance, which occurs when the learner realizes his or her lack of understanding to create the links necessary in learning, has been considered in this component. “When the mind resists doing something that we believe to be intelligent, it is almost always because it is giving precedence to some conflicting but more important behavior” (Adams, 1989, p. 30).

Research also indicates that even if students appear to be involved in a task that does not necessarily mean that they are cognitively on task (Maeder, 1995, p. 7).

However, Wittrock says that the use of prequestions and post questions to direct learners to important information has been helpful to learners (Wittrock, 1978, p. 18). Maeder points out that teachers can ask questions such as “What are you thinking about right now?” to help determine the attention of their students (1995, p. 9).

### Motivation.

The motivation component of the Generative Learning Model focuses on making sure the learner knows his or her role in the learning process and understanding that he or she has the responsibility and ability to achieve their learning goals. Wittrock explains that “from a cognitive point of view, accountability pertains to every person involved with the instruction,” which includes both the teacher and the learner (Wittrock, 1978, p. 18).

One area of research on motivation considered for the Generative Learning Model is achievement motivation, which has been studied by Weiner, Heckhausen, Meyer, and Cook (1972) and Weiner (1972) (Wittrock, 1974b, p. 192). Weiner, Heckhausen, Meyer, and Cook (1972) concluded in their study that “attributions to effort play an important role in determining the direction, magnitude, and persistence of achievement-oriented activity” (p. 239). That is, if a student believes his success in a certain subject is the result of his efforts, then he is more likely to pursue more learning. Wittrock cites Weiner, an Educational Psychologist who developed the Achievement, Motivation and Attribution Theory. Based on his research, Weiner (1972, p. 417) notes the following:

An attributional model of achievement motivation has been formulated in which the perceived causes of success and failure are identified as *ability*, *effort*, *task difficulty*, and *luck*. These elements are comprised within two

causal dimensions: *locus of control* (internal or external) and *stability* (stable or variable). These dimensions influence, respectively, affective reactions to success and failure and changes in the probability of success following achievement outcomes.

Wittrock (1978, p. 20) discusses Weiner's model in the following way: Successes and failures are attributed to internal causes or external causes, each of which can be stable or unstable. In his model, ability and effort are respectively internal-stable and internal-unstable causes, and task difficulty and luck are respectively external-stable and external-unstable causes. Attributions to internal causes increase emotional responses, whereas attributions to stable causes increase expectancies of future success or failure. Attribution of failure to lack of effort, rather than to luck or to lack of ability, leads to the inference that effort should be increased to attain success in school.

Several years later, Wittrock reiterates that the success of a student depends on whether the student realizes it is a result of his or her own efforts: "Attribution does make a difference on their performance. It seems to increase the learner's sense of self-efficacy if they succeed through their own efforts" (Wittrock, 1988, p. 291).

Another area of research on motivation studied was the delay-retention effect (Wittrock, 1974b, p. 192). "For many years, it has been believed that reinforcers should be given (a) immediately, (b) discriminately, and (c) frequently, during acquisition of behavior" (Wittrock, 1974b, p. 193). However, Wittrock notes a study done by Sassenrath and Yonge in 1969 where the results of participants who received delayed

feedback actually were higher than those who received immediate feedback. Wittrock explained that immediate feedback, when compared to delayed feedback, can reduce the learning that takes place because this “stops problem solving and other cognitive processes” (Wittrock, 1974b, p. 193). Later, as a result of his research, Brophy (1981) concluded that teacher praise is not the same as reinforcement and that teachers need to consider how students will respond to praise, and how students apply this understanding to their abilities and efforts and the outcomes of their efforts (Brophy, 1981, p. 27). Teacher praise should be used infrequently and should be contingent upon the quality of student conduct or performance (Wittrock, 1985, p. 124; Wittrock, 1986, p. 300; Maeder, 1995, p. 10).

Wittrock credits Richard deCharms for promoting ideas of personal causation and internal locus of control on the part of the students in studies he held with inner-city public schools (Wittrock, 1978, p. 19; Wittrock, 1990, p. 350). In his book, *Enhancing Motivation: Change in the Classroom*, deCharms provides insight on significant motivational issues such as achievement motivation, control of reinforcements, and goal-setting behavior, motivation training and academic achievement, and the learning of personal causation (1976). Wittrock also notes that the learner’s “sense of ability to control the environment” is essential in the learner’s achievement in school (Wittrock, 1978, p. 19). Wittrock (1978, pp. 19-20) provides a cautionary note when regarding the importance of locus of control:

Refusal to accept personal responsibility for events over which one has little or no control is sensible. Changes in a sense of environmental control would be vacuous unless the increased effort will lead to success

in schools. In the deCharms studies, success in school does follow change in motivation. Success should be a social reality as well as an individually perceived reality.

Wittrock discusses research done on anxiety and arousal, and cites several studies done to demonstrate the effect anxiety and arousal have on learners, and notes these two factors can influence other thought processes, such as attention and memory (Wittrock, 1978, p. 21).

Maeder writes, “Students must become self-regulated learners. They must set a goal, make a plan, and monitor and evaluate their progress. ...Self-efficacy is directly related to the use of cognitive and metacognitive strategies, but not directly to academic performance” (Maeder, 1995, p. 10).

### Knowledge.

The knowledge component of the Generative Learning Model considers how the learner’s memory works in the learning process. Maeder (1995) explains that there are several significant cognitive principles related to memory: “associating ideas in order, [relating them to] one another, and storing these ideas as images in long-term memory” (p. 6). When learners relate information to their knowledge base and prior experience, learning and memory increase (Maeder, 1995).

Since 1950, however, there has been a “renewal of interest in the use of imagery to facilitate memory and understanding” (Wittrock, 1977, p. 168). Wittrock suggests that “learning involves the active construction of stimuli, using verbal processing, imaginal processing (or propositional and appositional processing) and perhaps other types of processing” (Wittrock, 1977, p. 176). Wittrock cites Allan Paivio, who reported on

several studies that focused on the significance of imagery and verbal processing in the process of memory and learning (1971). Paivio says, “the view that images may have functional significance in behavior after all extends to the phenomena that are most relevant here, namely, meaning and mediation processes in perception, verbal learning, memory, and language” (Paivio, 1971, p. 7). Paivio (1971, pp. 389-391) explains the following regarding studies on imaginal and verbal mediators:

1. Associative strategies, coding or transformation of items, and so on, are the rule rather than the exception in verbal learning situations, at least for normal adult subjects
2. The relation of mediation processes to task difficulty arising from the nature of the to-be-learned material is a complex one
3. The degree of difficulty of the task may be related to meaningfulness in the sense of familiarity, abstractness-concreteness, or associative meaningfulness
4. With meaningful words, instructional sets to use imaginal or verbal mediators can greatly facilitate learning
5. It has been difficult empirically to separate the contributions of imaginal and verbal mediators in learning and memory
6. Accepting the functional usefulness of imaginal and verbal mediators does not thereby explain their *modus operandi*

Wittrock notes at least two different studies that observed verbal processing.

Bower, Clark, Lesgold and Winzenz (1969), who determined that recall of words increased when a cuing system, or “a set of rules, some structural information about the composition of the list, an alphabetic scheme, or a pegword system” is used (1969, p.



342). Wittrock & Carter (1975) conducted a similar study using the Generative Learning Model to determine how well a group of subjects would recall three groups of words: those that were conceptually unrelated, randomly arranged, or arranged in a meaningful way. The results demonstrated that when the subjects generated their own “hierarchical associations” among these words that there was an increase in recall (p. 489). Wittrock stated that this study “provided a useful test of the *generative hypothesis*... the generative hypothesis interprets learning primarily as the construction of concrete, specific verbal and imaginal associations, using one’s prior experience as part of context for the construction. It is a model of learning as the transfer of previous learning”(Wittrock, 1977, p. 173).

The cognitive process of attention was also very important to a particular researcher, David Ausubel. In one of the books for which he is noted, *Educational Psychology: A Cognitive View*, he included the following in the epigraph to the book: “If I had to reduce all of educational psychology to just one principle, I would say this: The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly” (Ausubel, 1968).

Because “the process involves getting the learners to generate relations among the parts of the text and between the text and their knowledge and experience, then learner’s knowledge, preconceptions, and experiences are significant to the design of generative instruction” (Maeder, 1995, p. 3).

“Learners do construct meaning from their memory. Their attitudes do determine, in part at least, what the effects of the reinforcer are and what they will learn and

remember” (Wittrock, 1974b, p. 193). Maeder (1995, p. 6) also points to Wittrock’s research (1986) in writing that

Verbal student thought processes were shown to be effective facilitators of recall when students were instructed to construct simple stories from the words, keeping the words in the stories in the same order that they appeared in the original list. Imagery mnemonics and verbal elaborations are effective primarily by the representations they provide of the relations among the parts of a written passage and the relations they illustrate between the passage and one’s experience.

#### Generation.

The generative process includes: “(a) organizational structures for storing and retrieving information; and (b) processes for relating new information to the stored information” (Wittrock, 1974b, p. 182).

Wittrock explains that the “basic concept that underlies this research on generative teaching for understanding is that comprehension depends directly on what students generate and do during instruction” (Wittrock, 1991, p. 169). However, if students are not able to “adequately attend to the task or cannot construct important meanings from it, they should be helped to attend to the meaning of the text, and they should be given the relations to be learned, which they can elaborate on in an attempt to understand and to remember them”(Wittrock, 1990, p. 367). Wittrock points out that students usually learn from “teacher-given elaborations” before they can learn from their own (1990, p. 369).

Early on in the evolution of the Generative Learning Model, much research was done on reading comprehension (Marks, Doctorow & Wittrock, 1974; Wittrock, Marks, & Doctorow, 1975; Rickards & August, 1975; Doctorow, Wittrock & Marks, 1978; Linden & Wittrock, 1981), although some research on reading comprehension in adults has been done more recently (McGuire, 1999; Friend, 2001). Linden and Wittrock (1981, p. 45) write

In Wittrock's model of generative learning, reading comprehension occurs when readers build relationships 1) between the text and their knowledge and experience, and 2) among the different parts of the text. ...According to this model of learning, teachers can facilitate reading comprehension by inducing the readers to attend to the text, to relate their knowledge and experiences to it, and to build associations, abstractions, and inferences from it. The generation of associations can be taught in a variety of ways, such as by inducing the learners to generate text-relevant summary sentences, headings, inferences, main ideas, critical comments, and evaluations.

The teaching of reading comprehension involves the following: “a) the differentiation of the learning strategies learners can use best to their advantage with each type of text and with each subject matter; b) the teaching of learners to identify each type of text; and c) the teaching of metacognitive procedures that will organize for the learners a sequence of reading strategies appropriate for the text and the subject matter” (Wittrock, 1998, p. 147).

Wittrock explains that “methods for stimulating understanding of text ask people to relate the text to their past background. We have them build a structure, and assemble the units of the text into some larger wholes. We ask them to do something actively with the text” (Wittrock, 1988, p. 291). The main emphasis is to get students to understand the text by actively doing something with the text. There are many strategies that will be addressed in another section that details all of the different generative learning strategies.

Areas of research in generation activities also focused on a number of subjects, such as mathematics (Wittrock, 1974b; Sayeki, Ueno & Nagasaka, 1991), science (Osborne & Wittrock, 1985; BouJaoude & Tamin, 1998), psychology (Davis & Hult, 1997; Wittrock & Alesandrini, 1990), educational psychology (Rickards & August, 1975; Barnett, Di Vesta & Rogozinski, 1981) and economics (Kourilsky, 1993).

### Metacognition.

Metacognition refers to “knowledge concerning one’s own cognitive processes and products or anything related to them, e.g., the learning-relevant properties of information or data” (Flavell, 1976, p. 232). Wittrock says, “Metacognition refers to knowledge about, awareness of, and control over ones cognition. Cognition includes thoughts, motivations, and feelings” (1994, p. 1). “Metacognitive processes include assessing the requirements of the problem, constructing a solution plan, selecting an appropriate solution strategy, monitoring progress toward the goal, and modifying the solution plan when necessary” (Mayer & Wittrock, 1996, p. 50).

Metacognition is what “links” the components of the model together (Maeder, 1995, p. 11). “Research on metacognition relevant to generative learning suggests that

enhancing self-monitoring and heuristic strategies can directly lead to increased performance in the other four components of the model” (Maeder, 1995, p. 13).

Understanding not only requires learner generative activities between the subject matter and one’s knowledge and experience, but also on “what students think about during instruction and practice and on their awareness and control over their thought or metacognitive processes” (Wittrock, 1991, p. 180). “Metacognition shows the benefits of teaching students ways to organize, plan, execute, and evaluate their cognitions to enhance their learning and achievement through awareness and self-control” (Wittrock, 1994, p. 28).

Bransford, Brown & Cocking explain that metacognition helps individuals take control of their own learning (1999). “Teaching practices congruent with a metacognitive approach to learning include those that focus on sense-making, self-assessment, and reflection on what worked and what needs improving” (1999, p. 12). By using reflective processes to write their own compositions, participants in the study held by Scardamalia, Bereiter, and Steinbach (1984) were able to increase their ability to monitor and analyze their thinking and they were able to recognize problems at the planning level, for which eventually they were able to develop solutions (1984, p. 185). Palinscar and Brown (1984) showed that when reciprocal teaching is used with modeling to guide students in their text interactions, this can lead to many benefits, including an increase in comprehension and “transfer to novel tasks that tapped the trained skills of summarizing, questioning and clarifying” (p. 117).

The relationship between metacognition and transfer of learning is also explained by Bransford, Brown, and Cocking (1999, p. 55):

Transfer can be improved by helping students become more aware of themselves as learners who actively monitor their learning strategies and resources and assess their readiness for particular test and performances....Metacognitive approaches to instruction have been shown to increase the degree to which students will transfer to new situations without the need for explicit prompting.

### Consideration of Other Learning Theories and Models

There are a number of cognitive theorists, also noted as individuals who provided significant theories that have had an effect on the Generative Learning Model. This section goes into more detail regarding how the Generative Learning Model relates to other theories of learning.

Grabowski notes that behaviorism “presents the most extreme difference from generative learning” (2004, p. 723). In behaviorism, the learner is passive, whereas in the Generative Learning model, a model of cognition, the learner is active. Also, “higher-level coding or integration is irrelevant” in behaviorism (2004, p. 723). However, one significant contribution from research based on behaviorism is “extensive research on message design – this is how the external message can gain attention and be driven by designer or teacher intentionality. This contribution provides an incomplete notion of learning comprehension, thereby making it an indirect ‘second cousin’” (2004, p. 723).

The main purpose of Connectionism, which is closely related to behaviorism (Wittrock, 1992; Grabowski, 2004, p. 723), is to strengthen associations. Wittrock refers to connectionism as a structural theory that “elaborates on the organization of information in memory by suggesting that knowledge is represented as connection weight patterns

around network elements” (Wittrock, 2000, p. 207). He notes that this theory does not apply directly to the challenges of teaching (Wittrock, 2000, p. 208).

One cognitive model related to the Generative Learning Model is schema theory (Wittrock, 1991, p. 170). However, schema theory does not address teaching and learning, as the Generative Learning Model. Wittrock writes, “Although structural schema theories have provided much useful information throughout history about the organization and storage of information, the functional models of this century lead more productively to our understanding of learning and educational practice” (Wittrock, 2000, p. 205). Unlike the Generative Learning Model, which is a functional model concerned with “how people learn, how they acquire and apply knowledge, how they think, feel, behave and survive” and is more concerned about the teaching and learning processes, schema theories are primarily concerned with how information is organized and stored.

However, research (DiVesta, 1989) shows the significance of the schema theories of Bartlett (1932), which recognized that the way experiences were represented and organized in long-term memory, had important effects on attention, perception, learning, memory, and retrieval. The functional theory Bartlett researched and wrote about in 1935 “was about the conditions of schema formation and the laws of knowledge construction, [which] lends itself directly and naturally to addressing the problems of learning and teaching” (Wittrock, 2000, p. 206). The Generative Learning Model expanded upon schema theories. As stated by Dembo, “Wittrock has extended schema theory into an instructional procedure called generative teaching. He has shown that when students are trained to generate analogies and images of what they read, their comprehension increases” (Dembo, 1994, p. 119).

The Generative Learning Model is a cognitive model based on neural research, and “is a theory of generative brain functioning, rather than an information processing model of memory” (Wittrock, 1992, p. 535). Wittrock explains further, “Neural systems of the brain do not function in the same way as many other biological systems. Neural systems do not transform inputs into outputs, as for example, digestion does. On the contrary, neural systems control other biological systems” (Wittrock, 1992, p. 535). That is, unlike information processing models, which focus on a transfer of information, where there is no internal control, generative learning theory focuses on generating an understanding as to why things function the way they do, which leads to predictions on what people can expect in the future, and finally, most importantly, how the learner has “control and direction over that future” (Wittrock, 1992, p. 535).

Even though the Generative Learning Model is based on cognitive principles, it is unlike cognitive theories because it is also based on neural research (Wittrock, 1991, 2000). There are other differences between the Generative Learning Model and other cognitive theories. Another main difference is that the focus of the Generative Learning Model is on generating relations and not on storing information. “The teaching of comprehension involves the process of leading learners to construct these two types of relations across concepts and between prior learning and new information. This active generative process is quite different from the process of getting learners to store information for reproduction on lists” (Wittrock, 1992, p. 532).

Wittrock wrote that the Generative Learning Model is based upon cognitive principles, not constructivist principles (2000). In an article published by Grabowski and Bonn, “Generative Learning Theory: A Practical Cousin to Constructivism,” the main



difference between generative learning and constructivism, as well as the relationship between Generative Learning Theory and Constructivism, are noted (2001, p. 2):

Wittrock emphasized one very significant assumption: The learner is not a passive recipient of information; rather she or he is an active participation in the learning process, working to construct meaningful understanding of information found in the environment. Therefore, generative learning theory (GLT) can be thought of as a “cousin to constructivism” since the latter (a philosophy of learning, not a theory of learning) also considers the learner to be an active process of information. However, constructivism is extreme in its position about the nonexistence of an objective reality.

Wittrock has not addressed this notion in any of his writings. Therefore, one of the benefits of GLT is that it helps us move beyond the question of what it is that we want students to know (e.g., is there an objective reality, who determines what reality is legitimized) and on to the question of how students come to know.

### Consideration of Adult Learning Theories

Several adult learning theorists share the same ideas as in the Generative Learning Model. The following aspects of the Generative Learning Model and generative learning relate to principles and theories of adult learning that have already been discussed in this literature review:

- Learner is active in the learning process (Knowles, 1970, pp. 52-53; Johnson & Bragar, 1997, p. 366; Vella, 1994, pp. 3-4; Brookfield, 1986; Knox, 1986, p. 35)

- Learner has a sense of control over his or her own learning environment (Knowles, 1970, pp. 52-53; Johnson & Bragar, 1997, p. 366; Wlodkowski, 1999; Vella, 1994, pp. 3-4)
- Learner relates new learning to previous experiences (Knowles, 1970, pp. 52-53)
- Learners believe that they are responsible for their own learning (Knowles, 1970, pp. 52-53; Jones et al., 1994)
- Learner believes that he or she is capable of achieving due to his or her own efforts (Wlodkowski, 1999)
- Learner receives significant feedback from instructor (Knowles, 1970, pp. 52-53; Vella, 1994, pp. 3-4)
- Learner applies or transfers learning to his or her own set of situations (Johnson & Bragar, 1997, p. 366; Kolb, 1984; Wlodkowski, 1999; Vella, 1994, pp. 3-4)
- Learner reflects upon what he or she has learned, and how he or she learned it (Kolb, 1984; Vella, 1994, pp. 3-4; Brookfield, 1986).

#### Research on Adult Learners

The research done considering the Generative Learning Model and adult learners focused on coding, organizational strategies, integration strategies that help the learner relate information to prior knowledge, and metacognition strategies. Grabowski cites several research studies that consider generative learning and adult learners; however, only those that are the most relevant to this study will be noted (2004, pp. 727-731).

Studies focusing on integration strategies for adult learners were conducted.

Two studies involving different elaborations and undergraduate students were run by Stein and Bransford (1979) and DiVesta and Peverly (1984). Results from the study conducted by Stein and Bransford indicated that student performance was facilitated when the learners developed elaborations that helped to clarify target concepts in acquisition sentences and that relevant questions also facilitate an accurate elaboration and retention of the material. Results from the study conducted by DiVesta and Peverly showed that students who generated or “actively organiz[ed] practice examples” (1984, p. 118) appropriately to the learning material did significantly better on far-transfer tasks (or those tasks that “require the learner to go beyond what was explicitly taught” (Wiedenbeck, Zila, & McConnell, 1995)) than those students who “merely attended to the materials already organized by them” (1984, p. 118).

Another study that focused on elaboration interpretation was held by Johnsey, Morrison, and Ross (1992) on adult learners studying professional development. Results showed that embedded elaboration strategies resulted in more “personal and paraphrased elaborations” than did the detached elaboration strategies; however, when considering recall and application learning, there was no difference between the learner-generated and experimenter provided (Johnsey, Morrison, & Ross, 1992, p. 125).

Stiebel (1988) used two different integration strategies with three groups of corporate supervisors studying conflict resolution. Working from the same set of principles of dispute resolution, one group received no instruction, a role-playing group received periodic lectures, and a generative learning group participated in exercises to learn concepts and apply them to sample conflicts, so that students could “construct

relations among elements of the new material and between the material and students' knowledge and experience" (p. xi). Adult learners from the generative learning group were able to understand and realize the value of the new material learned, and obtained higher comprehension scores than the role-playing group.

One study that included the combination of coding and integration generative learning strategies with undergraduates was run by Hooper, Sales, and Rysavy (1994). The results of this study showed that regarding achievement, those students who generated summaries performed better than those who generated analogies; also, those students who worked alone did better than those who worked in pairs (1994, p. 53).

One study focusing on adult learners and metacognitive strategies was found. In 1989, Leigh held a study at a small, Catholic, all women's liberal arts college in the Los Angeles where a group of Hispanic College women used metacognitive techniques in reading comprehension. The metacognitive strategy training, which was made up of "elements of the reciprocal teaching method with an emphasis on assisted performance and generative learning models" (Leigh, 1989, p. ix) proved to increase reading comprehension scores as compared to those who did not receive any metacognitive strategy training.

Kourilsky (1993) researched generative teacher training with professional teachers and found that when misconceptions were cleared and learning was reviewed, "pre- to posttest gains on both tests [including the Test of Economic Literacy and the Educational and pedagogical Literacy Assessment Exam] were significant" (p. 31). Wittrock (1998, pp. 150-151) notes that teachers can be taught how to be aware of student's cognitive processes and how to address these in their teaching strategies.

Teacher training programs can profit from these findings about the training of intelligence and the learning of subject matter. In teacher education programs, the students should learn the importance of the learner's metacognition, learning strategies, executive skills, and preconceptions in their learning, understanding, and transfer of subject-matter-based principles, rules, and situated knowledge. Learner-based cognitive psychological models of teaching offer a coherent and innovative research-based approach toward the reform and improvement of teacher education that can lead to major improvements in the learning and achievement of elementary and secondary school students.

#### Learning Strategies Used in the Generative Learning Model

Weinstein and Mayer suggest that techniques that a learner can be taught to use during learning are learning strategies, and can be more specifically defined as “behaviors and thoughts that a learner engages in during learning and that are intended to influence the learner's encoding processes” (1986, p. 315). All learning strategies or activities, however, have to be set up by the instructor. Wittrock (1978, p. 26) points out that both the teacher and the student have significant roles in the Generative Learning Model:

The learner is responsible for attending to the instruction and for active construction of mental elaborations. The teacher is responsible for designing and conducting the activities and interactions that facilitate the active construction of mental elaborations

Table 2 includes the major components of the Generative Learning Model and the responsibilities of and actions that the teacher and student should take, based on the writings of Wittrock and Grabowski.

Table 2

*Responsibilities of the Teacher and the Learner in the Generative Learning Model*

Component	Teacher	Student
Attention	<p>Teachers should direct “students’ voluntary attention to meaning, to the construction of relations between instruction and knowledge or experience, and to the construction of a theme or an explanation that makes the parts of the text or the instruction fit together coherently into a structure” (Wittrock, 1991, p. 176).</p> <p>Teachers are to “<i>teach students to attend to the processes of constructing meanings for instruction and subject matter</i>” (Wittrock, 1991, p. 180).</p>	<p>Students can answer questions provided by the instructor, or answer questions generated by themselves (Wittrock, 1990, p. 371).</p> <p>Students can also make note of what the learning objectives are for the lesson, and keep these in mind when going through the lesson (Wittrock, 1978, p. 18).</p> <p>The following activities that can help in gaining and maintaining attention:</p> <ul style="list-style-type: none"> <li>• provide attention training by self-control, planning, and organizing;</li> <li>• provide behavioral objectives and adjunct questions;</li> <li>• provide interpretation of the importance of the topic selected;</li> <li>• use problems, mysteries, inconsistencies, suspense, and enigmas; and</li> <li>• direct students’ voluntary attention to meaning (Grabowski, 2004, p. 737).</li> </ul>
Motivation	<p>Teachers are to “<i>teach students that success in school begins with a belief in themselves, their abilities, and their effort</i>” (Wittrock, 1991, p. 180).</p> <p>Teachers need to attribute learning to student effort (Wittrock, 1990, p. 349)</p> <p>Teachers should use rewards and praise that are directed toward learner’s own effort (Wittrock, 1990, p. 349).</p>	<p>“By exerting effort, their (the students’) abilities and strategies will enable to control outcomes. They can succeed” (Wittrock, 1991, p. 180).</p> <p>Students can express what they attribute their previous successes or failures to when learning the subject matter. Then, students can follow instruction from teachers on using different strategies for learning the material. When teachers then point out the success that students have with certain strategies, then students will feel more confident in using the strategies to continue learning and comprehending new material (Wittrock, 1991, p. 180).</p>

Table 2 (Continued)

*Responsibilities of the Teacher and the Learner in the Generative Learning Model*

Component	Teacher	Student
Knowledge	<p>“Teachers must understand students’ perceptions in their roles of learning” Wittrock, 1991, p. 175). Then, teachers must “teach learners how to become active at generation and show students that their effort in learning will produce tangible results, and that the educational system is sensitive to them and will recognize and reward their attempts to learn” (Wittrock, 1991, p. 175).</p> <p>Teachers are to “<i>teach students that learning with understanding is a generative process</i>” and that learning does not happen automatically (Wittrock, 1991, p. 180).</p> <p>Teachers should relate past experiences of learners to the text (Wittrock, 1990, p. 371).</p>	<p>Students could compare what they have learned to what they have previously experienced or know already (Wittrock, 1991, p. 180).</p>
Generation	<p>First, teachers are to learn “<i>the models, preconceptions, learning strategies, attitudes, and beliefs [of students] that are directly relevant to the subject</i>” the teacher is trying to teach (Wittrock, 1991, p. 181).</p> <p>Then, teachers are to “<i>teach students by designing instruction that will enable them to generate relationship among subject-matter concepts and between their models, or their knowledge, and subject matter</i>” (Wittrock, 1991, p. 181).</p>	<p>“Students invent new models and explanations or use or revise old models and explanations to organize new information into coherent wholes that make sense to them and are consonant with their experience and knowledge. Generation includes the processes of relating individual events and ideas presented in class and relating instruction to knowledge and experience” (Wittrock, 1991, p. 176).</p> <p>“Only those activities that involve the actual <i>creation</i> of relationships and meaning would be classified as examples of generative learning strategies” (Grabowski, 2004, p. 722).</p>
Megacognition	<p>Teachers are to “<i>teach students metacognitive or self-control strategies useful for directing their own cognitive and affective thought processes</i>” (Wittrock, 1991, p. 181).</p>	<p>Learners should learn how to “organize, monitor, and control their generative thought processes” (Wittrock, 1990, p. 370).</p> <p>“After reading, students’ metacognitive strategies should emphasize 1) coordinating and summarizing all the generations or relations into an organized and integrated meaning and 2) evaluating how well these comprehension-building activities have been performed” (Wittrock, 1991, p. 181).</p>

Most of the literature available focuses on teaching strategies and learning activities that help the learner generate understanding among the concepts presented in instruction and between instruction and prior knowledge. Wittrock lists a number of ways to simulate generation in his article, “Generative Processes of Comprehension”

(1990, p. 354), including a table that illustrates what is provided by the teacher and what is constructed by the learner, both among concepts presented in instruction and between instruction and prior knowledge. In another document, Grabowski provides a number of generative activities in a concept map (2004, p. 723).

Grabowski explains that even though the levels of thinking are not represented in his theory, “by examining the level of mental effort required for each of these activities, the two categories [of generative activities] can be broken down even further. Those activities that relate parts of the information in the environment together include coding, organization, and conceptualization levels of thinking, whereas those that relate part of the information to prior knowledge include integration and translation tasks” (Grabowski, 2004, p. 738). Grabowski developed a table that shows how different generative activities match up with the five levels of processing: coding, organization, conceptualization, integration, and translation (Grabowski, 2004, p. 738).

#### How Vignettes are Considered in this Study

The teaching strategy and learning activity that will be focused on for this dissertation is the use of vignettes. As a teaching strategy, the instructor and the researcher will develop vignettes relating to the students’ backgrounds and the course material to draw their attention to the material and to measure the students’ understanding of the material. As a learning activity, the instructor and researcher will teach students how to write their own vignettes so that they can use the same technique in the classes they teach or train.



The researcher considered the major components of the Generative Learning Model, as well as the following general overview of steps providing by Wittrock (1991, pp. 181-182), when working with vignettes in this course:

1. Begin with direct instruction that emphasizes teacher-given questions, summaries, graphs, and related comprehension devices
2. Follow by increasing emphasis on learner-generation of these comprehension-building devices
3. Conclude with the teaching of metacognitive procedures for self-guided generative learning from teaching.

Even though vignettes are the main teaching strategy and learning activity that this study focuses upon, other teaching strategies and learning activities were used to accommodate the use of vignettes in the Generative Learning Model. The other teaching strategies and learning activities will be discussed in more detail in the next several paragraphs; vignettes will be discussed in more detail in the following section.

#### Strategies and Activities Used with Teacher-Generated Vignettes

Different teaching strategies and learning activities were used to help students understand how to answer the teacher-generated vignettes. The following provides more details of the different strategies implemented in this study.

Donna Ogle created the K-W-L Chart in 1986 as a reading and learning strategy. This chart is made up of three columns, requiring the users to complete what they know (in the “K” column), what they want to know (in the “W” column), and what they learned (in the “L” column). In this study, the K-W-L chart helped students focus on what they needed to know, as well as their professional goals. The K-W-L has also acted as a

cognitive bridge between student's prior knowledge and understanding to what students are about to learn.

In-class discussions provided opportunity for dialog between participants and the instructor and among participants. The importance of dialog for adult learners has been cited by Daloz (1986) and Vella (1994).

Online presentations provided another form of direct instruction, which is helpful in teaching skills (Kauchak & Eggen, 1998). Online presentations also allow the learner to access information at his or her own convenience (Hiltz, 1997).

Learning logs, which have been used successfully with adult learners to help them reflect upon what they have learned and how they can possibly use their learning in other circumstances (Brookfield, 1995; Duncan & Clayburn, 1997; Wojnar, 2000), were written by participants.

#### Strategies and Activities Used with Learner-Generated Vignettes

Later in the course, the students were required to write three of their own vignettes. Teaching strategies and learning activities were used to assist participants to this end, some of which are identical to those used in helping participants answer the teacher-generated vignettes. The following strategies and activities were used: direct instruction via online presentations and in-class discussions; modeling and think aloud techniques; advanced organizer; and learning logs. More information on the activities and strategies not previously explained are included in the following paragraphs.

Again, the instructor provided direct instruction via online presentations and in-class discussions. The instructor posted online presentations on what vignettes are, how other educators have used the vignettes, and the process the instructor went through when

developing these vignettes. All of these online presentations were reviewed in class verbally, so that any questions could be addressed. The instructor also distributed a handout that detailed the definitions of important terms regarding the creation of vignettes, or stories in general, such as plot, setting, and characters.

The instructor then modeled the process by creating a vignette and having the students provide their input at different times. Modeling was developed by Albert Bandura, which entails “taking an individual through a series of progressively more difficult behaviors” (1965, p. 311). Educational researchers have also cited modeling as a significant method that has been used widely (Knowles, 1978, p. 87; Gagne, Briggs, & Wager, 1992, p. 89). Di Vesta (1989, p. 60) writes:

In modeling, the characteristics of the model *as perceived* by the observer are important in determining who is modeled. Vicarious reinforcement (i.e., memorial representations of the conditions under which the model is reinforced) is assumed to be a motivational determinant of *future* performance of the modeled behavior by the observer. By encoding observations of a model’s behavior a great deal of processing trial and error may be eliminated in the initial performance of a skill by the observer.

Di Vesta also says that modeling is a generative activity, because it relies on the learner’s perceptual abilities. Because the components of modeling are similar to components of cognitive theory, modeling has been described as a generative activity, and that Wittrock cited its importance in his writing (1978), its consideration and use in the Generative Learning Model is appropriate.

While the instructor was modeling the process of creating a vignette, the instructor also incorporated the “think aloud” technique, where the instructor described her thinking, so that students could understand the thought processes she was going through in creating the vignettes. This technique, coupled with modeling, usually involves having teachers describe their thinking while working with examples, so that students understand how the skills work (Kauchak & Eggen, 1998, p. 278; Airasian, 2004, p. 122; Campbell, Campbell, & Dickinson, 2004, p. 21). Having subjects think aloud while composing has been able to provide more insight on the composing process (Scardamalia & Bereiter, 1986, pp. 780-781). For example, Flower and Hayes (1980) determined that good writers “respond to *all* aspects of the rhetorical problem,” “create a particularly rich network of goals for affecting their reader,” and “represent the problem not only in more breadth, but in depth” (pp. 29-30). Flower and Hayes (1981) conducted another study in which they observed what occurs when writers pause during the composing process.

To assist students with the “building” or creation of their stories, the instructor instructed them to complete the “vignette starter,” a type of advanced organizer, before writing their vignettes. The concept of the advanced organizer was originated by David Ausubel. Ausubel wrote that advanced organizers help the learners incorporate and maintain meaningful learned material in three ways: 1) “new material is rendered more familiar and potentially meaningful” and “the most relevant ideational antecedents in cognitive structure are also selected and utilized in integrated fashion”; 2) when developed at an appropriate level for the learners, advanced organizers can “promote both initial learning and later resistance to obliterative subsumption” (also known as

forgetting); and 3) “the use of advanced organizers renders unnecessary much of the rote memorization to which students often resort because they are required to learn the details of an unfamiliar discipline before having available a sufficient number of key anchoring ideas” (1968, p. 137).

Students reflected upon their experiences in one of their learning logs. The literature regarding the use of vignettes with adult learners as a teaching strategy and learning activity will be reviewed in the next section.

### Using Vignettes to Teach Adults

The research has not shown many examples of using vignettes to teach adult learners; however, the literature has shown several examples of how stories and narratives such as the case study, case story, and scenario – all of which are similar to vignettes – have been used for educational purposes.

Sometimes stories are used as a way to introduce books, so that the readers realize the significance of the contents and because that “tales are more engaging than expositions, because a story places conceptual issues into an integrative context, and because qualitative methods are playing an increasingly important role in educational psychology” (Calfee & Berliner, 1996, p. 1). Stories are also used as real-life examples in books to illustrate a significant point or set of points in a book (Daniels & Bizar, 1998; McKenzie, 1999, pp. 24-26; Driscoll & Freiberg, 2000; McKenzie, 2002, pp. 119-126).

Karen Hyder (n.d.) wrote the following regarding the use of storytelling as a training tool:

Stories are the foundation for how we communicate. Through the spoken word, stories enable humans to make a personal connection to content on a

deeper and richer level. Storytelling encourages learning: meaning is derived and content is retained by connecting data and events through the contextual frame of our own past experiences. ...

When we embed learning in stories and storytelling exercises, we increase retention. What is important is what learners retain, not what we impart.

Using stories can help you assess how much is the right amount of material for participants to absorb successfully.

McKenzie emphasizes the importance of stories in “What’s the Story Here?” which is a chapter from his book *Planning Good Change with Technology and Literacy*. Here, McKenzie explains that

Story creating and telling should be a basic tool of any group trying to build good new futures. Some call this activity scenario building. Others call it myth building. Still others call it visioning... The best stories are rooted in soulful human realities, the soil and the loam of dreams. They are personal, compelling, and quite concrete in their details and examples. Good stories can make you smell, touch, and taste what is about to happen” (McKenzie, 2001, p. 83).

The use of stories in the classroom has contributed to students’ learning in many ways. Storytelling is one way that has been shown to enhance critical thinking skills and problem solving skills. In the section, “Storytelling in the Classroom,” the Story Arts web site provides detail as to how storytelling can enhance critical thinking and problem solving skills in a number of disciplines. Another web site that promotes the use of storytelling for problem solving is the Turner Learning, Incorporated web site. This web

site also goes into the different benefits and applications of storytelling and contains a number of storytelling resources. In the article, “Capstone Experiences in Career and Technical Education Practice,” Kerka points out the importance of storytelling as an example of a capstone, or a type of learning that is experiential and promotes critical thinking and problem solving (2001). Another example of the use of stories to enhance critical thinking skills and problem solving skills is an Economics course, *Economics Principles*, offered by Professor Sexton at Pepperdine University.

Storytelling has been shown to provide adults with many benefits as well, such as the following:

- Storytelling is a “co-creational process” (Wiles, 1989, p. 98), and as a process, involves collaboration and community learning (Baker & Greene, 1977; Wiles, 1989)
- Storytelling allows adults to control and form the inchoate, and to give their lives meaning (Daloz, 1986)
- Storytelling “enhances visual, verbal, and memory skills” (Wiles, 1989, p. 98)
- “Storytelling can be used to facilitate adult development” (Wiles, 1989, p. 98)
- Storytelling “provides a vehicle for moral education by presenting a learner with possible outcomes of decisions and behaviors” (Wiles, 1989, p. 98).

Writing stories provides a number of benefits for the learner. Writing stories requires the use of one’s imagination, and has a great potential for helping students exercise and develop “verbal linguistic intelligence,” (Campbell, Campbell & Dickinson, 2004, p. 21) one of the intelligences designated by Howard Gardner (1983). This particular intelligence consists of “the ability to use language to convince other

individuals of a course of action,” the capacity to use mnemonics “to help one remember information,” the ability to explain concepts, and “the ability to use language to reflect upon language, to engage in ‘metalinguistic’ analysis” (Gardner, 1983, p. 78). Other benefits of writing include allowing writers to express their individuality, self-expression of problems or feelings, independent thinking, confidence building, listening skills, and reading and speaking skills (Zinkoski, 2004)

The research shows that narratives have been used extensively with adult learners, particularly case studies, case stories, scenarios, and vignettes – all of which will be described and explained in more detail in the next section.

#### Different Forms of Narratives Used with Adult Learners

There are different forms of narratives, or relating real-life accounts, that have been successful in teaching adults. This includes forms such as case studies (Galbraith, 1998, p. xiii; Marsick, 1998, p. 202; Dottin & Weiner, 2001, p. xv; Sudzina, 1999), case stories (Maslin-Ostrowski & Ackerman, 1995, 1997, 1998; Galbraith, 1998, p. xiii) and scenarios (Davis, 1987; Schwartz, 1991; Glau & Jacobsen, 2001; McKenzie, 2001). One form in particular, vignettes, which are a combination of all of the aforementioned forms, will be the primary form considered in this research study.

#### Case Studies for Educational Purposes

Ford (1969, p. 19) indicated that teachers and leaders use case studies to do the following:

- Develop skill in decision-making
- Lend reality to indirect experience
- Pool the insights of group members



- Focus on concrete problems
- Help learners see the many points of view
- Show that few problems have easy answers
- Bridge the gap between theory and practice
- Broaden the experience
- Analyze motives
- Present problems in proper perspective
- Discourage “causal over simplification”
- Increase involvement in learning
- Train learners to think independently as well as cooperatively
- Give synthesis and meaning to parts of a whole.

Case studies are used with adult learners studying for various professions. In education, several individuals have published sets of case studies. For example, one set of cases have been published by Silverman, Welty, and Lyon (1994) which McKeachie noted in his book, *Teaching Tips* (1999, p. 177). Erskine Dottin and Mickey Weiner published cases in their book, *Enhancing Effective Thinking and Problem Solving for PreService Teacher Education Candidates and Inservice Professionals* in 2001. One other set of case studies developed for educational purposes are those developed for teaching and learning in different content areas by Mary R. Sudzina (1999).

There are variations in the case method, allowing for cases to be presented via role play or audiovisual presentations, but for the purpose of this literature review for this study only information on written cases is included.

Case-based instruction falls into the same category as case studies. Lacey and Merseth (1993, p. 547) reported the use of case-based instruction with a group of educators. They noted the following:

Cases, hypermedia and computer networks each present ways to bring the dilemma-laden, complex situations of teaching into university classrooms or into the places where new teachers live and work... By undergoing the examination of multiple perspectives encouraged by the design of cases and hypermedia, and by addressing their colleagues' concerns through networking, students unearth and critique their own tacit assumptions about teaching and begin to revise their thinking.

Kerka (2001) explains that even though the case method has been used successfully for many years, "traditional cases can be static and dated, are read passively, and rely on text alone" (2001, p. 3).

#### Case Stories for Educational Purposes

The case story can be used with a variety of audiences, including people who work in schools, hospitals, and businesses – there seems to be no limit. However, this approach does require that the students are willing to "subject personal work experiences to systematic self-scrutiny and the analysis of others" (Maslin-Ostrowski & Ackerman, 1998, p. 304).

There are several advantages and disadvantages to using the case story method. Advantages include helping people learn problem-solving techniques and analysis, fostering collaboration and collegiality, having students comprehend their own stories of practice, and bridging the gap between action and thought (Maslin-Ostrowski &

Ackerman, 1998, p. 312). Disadvantages to using the case story approach include the length of time (an entire process takes a minimum of three hours), students who are reluctant to write require a longer time before they are able to get involved, and “War stories” or stories told over and over again that are not subject to alteration may appear (Maslin-Ostrowski & Ackerman, 1998, p. 313).

### Scenarios for Educational Purposes

Another narrative form used to educate adults is scenarios. This section focuses on the research done with adult learners and scenarios.

The British Association of Art Therapists prepared a booklet of scenarios to help professionals write their own outcome and summary statements. The booklet is available online and is part of a pilot study. The web site explains, “The scenarios are designed to provide you with ideas and guidance on relating the outcomes to your professional practice. They are intended to stimulate your thinking and to help you prepare your own outcome and summary statements” (British Association of Art Therapists, 2004).

Gregory R. Glau and Craig B. Jacobsen wrote a book entitled *Scenarios for Writing: Issues, Analysis, and Response* in 2001 that includes several scenarios that reflect current topics and issues of today. The purpose is for teachers to take these scenarios and have their students discuss them and to expand upon them via writing and research strategies. The book includes a balance between collaborative and individual activities. There is also an accompanying web site for students to conduct more research, and an instructor’s video to assist in the discussion of the scenarios.

McKenzie notes that the development of scenarios is an important step in his Future Perfect Planning program. This program is based on Stan Davis’ work, *Future*

*Perfect* (1987), in which Davis provides various possibilities to be considered in business and organizations via realistic examples. Future Perfect Planning is a strategic plan to help educators prepare for how to integrate technology into education in the future. McKenzie credits Schwartz, who was the head of “scenario planning for the Royal Dutch/Shell Group of Companies in London” (Schwartz, Leyden, & Hyatt; 1999, p. 321), for a five-step guide to the building of scenarios that can help as a guide to the planning process. The process articulated by Schwartz includes the following: 1) identifying the focal issue or decision; 2) identifying and listing the key forces in the local environment; 3) listing the driving forces, or the “driving trends in the macro-environment that influence key factors” 4) ranking of key factors and driving trends; 5) “selecting scenario logics,” 6) “fleshing out the skeletal scenarios,” 7) returning to the “focal issue or decision identified in step one to rehearse the future,” and 8) “spending time and imagination on identifying a few indicators to monitor in an ongoing way” McKenzie re-explains this process in the following five steps: 1) articulating the mind set, 2) information hunting and gathering, 3) identifying and exploring the driving forces, 4) uncovering predetermined elements and critical uncertainties, and 5) composing a plot (2001, pp. 33-37).

Myrick (1998) conducted a study that assisted in the development of a guide for classroom management. Myrick’s study consisted of designing and conducting a survey of elementary teachers, using the survey to identify the most significant discipline problems in classrooms, developing scenarios portraying these discipline problems and validating these scenarios via a panel of experts and a field study, then developing at least two or three effective strategies based on effective discipline models for each scenario.

Afterwards, Myrick gathered all of these scenarios in a book to be reproduced and distributed to the participating teachers. In a sense, Myrick used the information regarding classroom management problems to create the scenarios, and then relied upon a number of successful classroom experiences and effective strategies to provide answers for these scenarios.

In a study that focused on developing a software training program for novice teachers, with the purpose of aiding them in “practicing classroom management techniques and discipline strategies before they enter the classroom” (Walters, 1999, p. xiv), Walters included the use of scenarios. “The analyses provided positive results, demonstrating that the software’s content and scenarios were relevant for novice and student teachers” (1999, p. xiv).

### Vignettes for Educational Purposes

For educational purposes, the use of the term “vignette” also implies that the real-life stories are examples of situations for reflection by students or others trying to find out how a specific situation was handled. Several resources provide vignettes to educators for the purpose of designing instructional experiences that help students develop abilities to achieve certain standards. These include *Interactive Learning: Vignettes from America's Most Wired Campuses* by David G. Brown from Wake Forrest University; the Vignettes about Using Technology in the Classroom section of the Educational Development Center web site, and the Vignettes section of ENC Online: A K-12 Math and Science Teacher Center.

Chris Dede, who is from the Graduate School of Education in George Mason University, wrote about National Council of Teachers of Mathematics (NCTM) standards

included vignettes portraying “exemplary educational situations in which a standard is applied” (Dede, 1998, p. 1). Dede explains the importance of the vignettes as follows:

The new NCTM Standards will incorporate “illuminations” to aid in conveying images of effective practice. These illuminations will include written vignettes, but may take other forms as well (such as multimedia case studies). Illuminations will have the dual purpose of illustrating exemplary practice and inviting more fundamental reflections about the assumptions, beliefs, and values that underlie conventional instructional approaches. As such, they must convey context, content, and process of mathematics education (1998).

Patricia Campbell conducted research and evaluation to increase gender and race equity in math, science and technology education and views vignettes as stories that can be used for teaching purposes. Campbell explains the importance of vignettes in math and science education in her brochure, “How Would I Handle That? Using Vignettes to Promote Good Math and Science Education” (1996, p. 3), and describes vignettes in the following way:

A vignette is a short story without an ending. It is short, but not too short to present an issue. It is detailed, but not so detailed that the underlying issue gets lost. A vignette presents an issue, such as the underrepresentation of girls in advanced math courses, in a context with which individuals can identify. A good vignette has:

1. fewer complexities and personalities than real life.
2. sets up a situation in which there is no one “right answer.”

3. is flexible enough that individuals from different groups (teacher/administrator, female, male, liberal/conservative) can identify with the story and bring their perspective forward in discussions of solutions.

The major purpose of a vignette is to serve as a springboard or discussion.

To be the most useful, the discussion should focus on solutions to the issue being raised in the vignette (1996, p. 3).

Campbell (1996, p. 3) also indicates that there are three major steps in the development of vignettes:

1. Determining issues or areas of concern for those who will be using the vignettes
2. Developing situation that are realistic and are relevant for those who will be using them
3. Testing the vignettes with groups similar to those who will be using them to ensure that the vignettes are clear and do provide people with an opportunity to deal with the issues you intended them to

Campbell's definition and application of vignettes is similar to that of Maeder (April 4, 2002), who uses vignettes to teach adult online teacher preparation courses: Online Teaching and Learning Models through UCLA Extension and Distance Learning for Educators through New Jersey City University.

For the purpose of this study, vignettes are defined as "incomplete short stories that are written to reflect, in a less complex way, real-life situations in order to encourage discussions and potential solutions to problems where multiple solutions are possible"

(Jeffries & Maeder, 2004, p. 8). Jeffries and Maeder (2004, pp. 8-9) list the five criteria as follows:

1. *It is a story.* It is a narrative but not a dialogue, case study, case story or scenario.
2. *It is short.* Its length is 50-250 words.
3. *It is relevant.* It simplifies a real-life situation that is relevant to participants but one in which no participant is likely to have expertise.
4. *It allows for multiple solutions/answers and is intended to encourage independent thinking and unique responses.*
5. *It is purposely incomplete.* It can be *truncated* – plot line stops at a critical juncture and participants complete the vignette – or *abridged* – story's details are omitted so that multiple interpretations can be defended.

Maeder develops and uses vignettes in his online courses primarily for assessment purposes, so that he can determine how much of the material and information he has covered the students understand and are able to apply. This study has attempted to show how vignettes can be used to help students achieve academically, in requiring the students and participants to complete the vignettes the teacher has created, based on their backgrounds and interests, and on the course material.

The researcher, however, decided to build upon the idea of using vignettes in the classroom as not only teaching and assessment strategy, but also as a learning activity for students, in that students were required to generate their own vignettes. The next sections detail how using vignettes as a teaching strategy and learning activity work well within the Generative Learning Model.



### Use of Vignettes in the Generative Learning Model

Whether teacher-generated or learner-generated, the use of vignettes is considered to be a generative activity, because it involves “generating integrated relationships between the external stimuli and the memory components” (Grabowski, 1996, p. 914). In this respect, vignettes function like analogies, examples, applications, and interpretations, which are cited as this type of generative activity by Grabowski (1996, p. 914) and Wittrock (1990, p. 354).

#### Vignettes as a Teaching Strategy

As a teaching strategy, the instructor generated a set of vignettes and asked the students to complete them based on their understanding and ability to apply the course content. The instructor used this as a strategy to direct their attention to important information, requiring them to consider their prior knowledge and the new information they had learned in the course, and to elaborate on different possibilities that would complete the vignette and consider course material.

Having students create the vignettes involved both types of generative learning activities. To generate learning among the concepts learned in the course, the students had to do the following types of generative learning activities when answering these vignettes: construct main ideas and write summaries. Students were required to pull the main ideas from the book to answer questions, and then to provide definitions and explanations, which are a form of summarizing text. To generate learning based on prior experiences, the students had to do the following types of generative learning activities when answering these vignettes: solve problems, give examples, put text into their own words, and develop explanations. They had to solve the problem in the vignette by

providing examples of techniques that would work within the vignette. To do this, they had to put the information from the text into their own words and develop sound explanations for their reasoning as well.

The instructor and researcher considered the Generative Learning Model in having students respond to the teacher-generated vignettes. How she followed the model is explained in more detail in the section “Using The Generative Learning Model and Teacher-Generated Vignettes to Help Students Enhance Their Academic Achievement,” located in Chapter 3.

#### Vignettes as a Learning Activity

As a learning activity, students were required to generate a vignette or short story that they could possibly use in their own classrooms. They were to write three of their own vignettes. Wittrock (1990, p. 347) wrote the following regarding writing and the Generative Learning Model:

Good reading, like effective writing, involves generative cognitive processes that create meaning by building relations (a) among the parts of the text and b) between the text and what we know, believe, and experience. The generation of those two types of relations is the essence of reading comprehension. The meaning is not only on the page nor only in our memories. When we read, we generate meaning by relating parts of the text to one another and to our memories and knowledge. ...

When we write, we generate meaning by relating our knowledge and experience to the text. Writing also involves building relations among the words in sentences, the sentences in paragraphs, and the paragraphs in

texts. In these important ways, generative reading comprehension and effectively writing relate closely to each other.

Students are required to take part in the writing process. Scardamalia and Bereiter (1996, p. 718) note that the most well-known and cited model for composing was developed by Hayes and Flower (1980a, 1980b). This model specifies that there are three major processes that occur in writing: planning, translating, and reviewing. The planning process, which involves generating, organizing, and goal-setting subprocesses, involves taking “information from the task environment and from long-term memory and to use it to set goals and to establish a writing plan to guide the production of a text that will meet these goals” (1980a, p. 12). The translating process “acts under the guidance of the writing plan to produce language corresponding to information in the writer’s memory,” and the reviewing process, which consists of “reading and editing subprocesses” to “improve the quality of the text produced by the translating process” (1980a, p. 12). The process involved in creating case stories, described in preceding paragraphs, was considered in helping students write their vignettes also. The following paragraphs explain how the instructor considered the components of the Generative Learning Model when showing students how to create their own vignettes.

The instructor and researcher considered the Generative Learning Model in having students create their own vignettes. How she followed the model is explained in more detail in the section “Promoting Higher Order Thinking with Vignettes,” located in Chapter 3.

### Research on the Generative Learning Model and Stories

Much research done on the Generative Learning Model and stories focused on reading comprehension or reading strategies. Many of these studies were done in the 1970's and 1980's partly because the main purpose of the model was comprehension, which is usually related to reading comprehension. One study done by Linden and Wittrock (1981) indicated that when children generate their own associations they are able to show greater comprehension than those who do not generate their own associations. "When children construct relations between stories in their readers and their experience and knowledge, their comprehension increases sizably" (Wittrock, 1987, p. 32). More recently, Denner, Rickards, and Albanese (2002) held a study in which the use of story impressions (SI), or an activity that "entails composing a guess from clues," was considered in how they influenced passage recall relative to a more passive prereading activity of reading a content preview (CP) (p. 2). The study involved two sets of eighth grade students – one that used the SI technique and one that used the CP technique. Results showed that SI, with which the Generative Learning Model was incorporated, was more successful than CP in assisting in passage recall.

Another recent study was held by Brown (2001) held a study that required elementary students to use thinking maps to analyze information in two different books for independent reading, and then use this information to generate test questions for a test that would be similar to one provided by a reading management program. The results showed that "half of the learner-generated test items matched higher level thinking categories. Students were able to generate multiple choice test items, distracters, and correct answers at a high level of thinking" (p. 39).

## Accommodating Adult Learners in the Online Environment

### Description and Benefits of Online Learning

Online learning is essentially learning that takes place, either partly or entirely, over the Internet (Ko & Rossen, 2001, p. 2). It is a form of distance education that does not always require the students to meet with the instructor in person for learning to take place. Harasim, who was one of the first individuals to teach a totally online graduate course in Canada in 1985 (Harasim, 2000), describes learning online as a “learning network classroom” with Hiltz, Teles, and Turoff (1995, p. 3) as follows:

Imagine learning with peers, expertise, and resources that are available whenever you want or need them. These “classmates” are from Moscow and Mexico City, New York, and Hong Kong, Vancouver and Sydney – from urban centers and rural and remote areas. And they, like you, never need to leave home... Your learning network “classroom” is anywhere that you have a personal computer, a modem, and a telephone line, satellite dish, or radio link... Supported by these networks, educators can create effective learning environments whereby teachers and learners in different locations work together to build their understanding and skills related to a particular subject matter

“What makes teaching online unique is that it uses the Internet, especially the World Wide Web, as the primary means of communication” (Ko & Rossen, 2001, p. 2). The type of online learning used in this course and study involved a combination of online activities (not requiring class meetings) and face-to-face activities, making the course a hybrid course (Ko & Rossen, 2001, p. 10).

Because adults lead such busy lives, the environment in which they learn ideally should allow for some flexibility, and at the same time provide a welcoming atmosphere of acceptance. A hybrid online course, that is, one that meets partly online and partly in the classroom, is one that can provide the best of both worlds to adults. Posting course materials, readings, and assignments online ahead of time allows students to work at their own pace, and learn at their own convenience. Scheduling face-to-face class meetings can allow students to socialize with others (get to know each other), meet and ask questions of the instructor, and experience hands-on learning and activities.

There are many benefits to online learning. One major benefit of online learning for adults is that it helps them overcome several barriers to obtaining a degree. Cross identified three types of barriers: situational, institutional, and dispositional (Cross, 1981, pp. 97-108). Online learning can address all of these barriers. Situational barriers can be met by allowing information and learning to be available at any time and any place. Institutional barriers such as course scheduling can be met by having online courses meet at any time, so as to avoid schedule conflicts. Dispositional barriers such as negative attitudes toward learning or one's ability to learn can be confronted if the online course is set up so that the adult learner is given the confidence to use the technology efficiently, and given guidelines or "netiquette" instructions to communicate effectively.

McKenzie notes, "If designed properly, [these] online learning programs may offer many of the following advantages: an emphasis on learning as opposed to teaching, learning independent of time or place, self-paced, customized, competency-based, no heroes needed, uniform, and cost effective" (McKenzie, 2001, p. 100). Hiltz (1997, p. 2)

notes that a significant part of online learning is made up of asynchronous discussions, where

The participants may connect at any time around the clock, and from any location in the world accessible by the Internet or a reliable telephone system, rather than having to be online at the same time. The system stores the entries in a permanent, ordered transcript which keeps the equivalent of 'bookmarks' to separate anything that is 'new' for each individual from items that have already been seen.

Results from five controlled experiments done by Distributed Group Support Systems that used asynchronous computer mediated communication from 1990 to 1995 revealed the following: "all individuals are free to participate as they see fit and as much as they desire to [and] the freedom of participation as an individual seems to encourage: a greater expression of ideas, more reflection, less inhibition of ideas, and consideration of more options" (Hiltz, Dufner, Fjermestad, Kim, Ocker, Rana, & Turoff, 2001, p. 499).

Harasim (1987, pp. 124-128) did research on online graduate courses in education where students identified the following benefits in asynchronous learning environments:

- Increased interaction: quantity and intensity
- Increased access to group knowledge and support
- Democratic environment
- Convenience of access: the "24" hour class
- Increased motivation
- Increased user control over the learning interaction

There are several benefits for having a hybrid course. These benefits include face-to-face meetings, which allow for different forms of communication. “Since online groups depend on text-based communication, they lack the benefit of nonverbal cues that facilitate interaction in a face-to-face meeting” (McIsaac & Gunawardena, 1996, p. 417). Two advantages to including face-to-face meetings within a course are: 1) there is a stronger possibility of forming a learning network in which a number of friendships or close personal relationships are formed; and 2) periodic face-to-face meetings can help students to stay motivated and keep up with their work (Hiltz, 1997).

#### Characteristics of Adult Online learners

Studies on characteristics of graduate students participating in online courses were limited; however studies showing the characteristics of adult online learners were found. One study done by the developers of the California Distance Learning Project (1997) shows that students who are most interested in distance education have the following common characteristics: “are voluntarily seeking further education, are motivated, have higher expectations, and are more self-disciplined, tend to be older than the average student, and tend to possess a more serious attitude toward their courses” (1997). A more recent study done by Halsne and Gatta (2002) compared the learning characteristics of online learners and those in traditionally delivered instruction in a community college setting. Halsne and Gatta determined that the majority of the online learners who responded were “female, full-time students, less than 25 years of age, White/Caucasian, and had taken some past college courses. The most frequent major fields of study were business, education, computers, criminal justice, and accounting” (2002). These studies



show that adults of all ages, females and males, various backgrounds and professions are taking part in online education.

It is important to note that even though the number of adult online learners is increasing that online learning is not for everyone (Wojnar, 2000; White & Weight, 2000). For this reason, a list of attributes of successful online learners, indicated by a number of college or university web sites, and online researchers, will be considered. This list includes the following:

- They take command of their own learning, master more things, and master them better than those who rely on being taught. They tend to have greater zest for learning and make better use of their time (Priest, 2000, p. 41).
- Adults tend to take responsibility for their own learning. Online learners are able to tailor learning for themselves, not just accept something ready-made (Priest, 2000, p. 41).
- How well online learners learn depends, to a great extent, on their temperaments, circumstances, needs, tastes and ambitions. Success in learning depends not so much on the subject itself (or maybe even on the medium) as on the learner's own engagement (Priest, 2000, p. 41).
- They manage and allocate time appropriately (Kircher, J. 2001).
- They display technology skills (Kircher, J. 2001).
- They can deal with technology and its frustrations (Kircher, J. 2001).
- They are active learners (Kircher, J. 2001).
- They are highly motivated, self-directed, and self-starting (Kircher, J. 2001).

- They have appropriate writing skills for online learning (Kircher, J. 2001; Howard Community College Online Classes web site).
- They have appropriate reading skills for online learning (Kircher, J. 2001).
- They may need a flexible schedule but understands that flexibility does NOT mean the course will be easy (Howard Community College Online Classes web site).

### Theories of Online Learning and Adult Learning

Stilborne and Williams write about meeting the needs of adult learners online.

Some of the aspects of adult learning they state should be taken into consideration include motivation, comparing past experiences with new experiences, sharing experiences, feedback, and practical learning (1996). To this list, the researcher has added the consideration of control of the learner.

This section will define each of these aspects of adult learners, demonstrate how principles and theories of online learning relate to these aspects, and describe how these aspects or needs of adult learners can or should be met in online learning.

#### Motivation

As indicated previously, motivation is an important consideration for adult learners. Stilborne and Williams explain that adults “resist learning material if forced on them, or if the only reason given is that the material will, in some vague way, be ‘good for them to know.’ Adults need to know why they are being asked to learn something; they want to know what the benefits will be before they begin learning” (1996, p. 2). Adult learners are usually highly motivated when entering the learning environment (Knowles, 1978), which has been noted as a significant factor in distance education

(Ehrman, 1990, p. 17). Adults are also motivated by their desire to enhance their proficiencies (Knox, 1986, pp. 15-20), which both Verduin and Clark believe should be addressed in the cognitive, psychomotor, and affective domains that “define the behavioral ‘package’ that each adult possesses” (1991, p. 25).

To address this, it is important that adult learners realize how the online course will address their goals and what they need to know. To help keep students motivated, it is advised that online instructors consider different options other than text on the screen, that they state benefits for each course segment, and have “graduates” communicate with current students (Stilborne & Williams, 1996, p. 3).

#### Comparing Past Experiences with New Experiences

Prior experiences that adults have are extremely important to consider when adults learn something new, because “most adults need to see how it [the experiences] fit in with (or is different from) what they already know” (Stilborne & Williams, 1996, p. 5). Hayes (1990) believes that educators of adult learners should understand adult learners when providing distance education, and cites Brookfield (1986) for the importance of considering life experience in adults and supports Knowles’ theory that adults bring a variety experiences to the learning situation, which act as a “rich resource of learning” (Knowles, 1984, p. 11).

#### Sharing Experiences

Adults need to be able to compare past experiences with new experiences in the learning process (Knowles, 1970, 1978, 1984, 1995). Suggestions for online instructors include: building in ways for learners to share their ideas and experiences, having them

publish something on the web, and developing a web resource that focuses on a teacher's personal interest or specialty (Stilborne & Williams, 1996, p. 7)

Adults avoid failure, and are not as open to the trial-and-error approach.

Suggestions for helping adult students to become successful include: making the first test or exercise relatively easy so that everyone can be successful, making sure that students know what technology needs to be in place so that they can successfully gather information and communicate during the course, making sure that students are familiar with their software programs, such as their e-mail program, their Internet browser, how to save and store files, and how to upload and download files, and having students establish "learning partners" so that they can work with others when having difficulties (Stilborne & Williams, 1996, p. 8). White and Weight write the following considering directions and help: "Online learners require access to guidance. Instructors, other students, and software should prompt learners step by step through difficult information and activities" (White & Weight, 2000, p. viii).

### Feedback

Adults need informative feedback (also referred to as orientation to learning) throughout a course (Knowles, 1970, 1978, 1984, 1995). The two types of feedback noted as useful are "recognition for work well done and guidance when improvement is needed" (Stilborne & Williams, p. 6). White and Weight also note the importance of student feedback: "Online students learn through active engagement with faculty and other students. Online learners need to know if their ideas and responses are productive" (White & Weight, 2000, p. vii).

Suggestions for how to do this in the online course include providing positive feedback at least as often as students receive suggestions for improvement, making sure that answers to quizzes and tests are available almost immediately, and providing a way for learners to keep track of their own progress (Stilborne & Williams, p. 6). White and Weight note the importance of consistency and organization: “Explicit and consistent organization increases the retention of new material. Summaries, interaction, and feedback should organize and provide a synopsis of the material presented. Instructional segments should be short to accommodate ‘information overload’ common in virtual situations. Online learners develop a sense of accomplishment when instruction is divided into modules, unites, and subunits” (2000, p. viii). Finally, White and Weight suggest that for assessment and record keeping, “a tracking system should inform online learners of the materials and activities they need to review before proceeding” (2000, p. viii).

### Practical Learning

Adults want their learning to be practical (Knowles, 1970, 1978, 1984, 1995; Johnson & Bragar, 1997). They need to see how theories will apply in real life. They also need to see that the “material they are learning is relevant, and that it will have an immediate effect. They want to see how the objectives of the learning relate to authentic situations and real solutions to problems” (Stilborne & Williams, 1996, pp. 3-4).

Some suggested activities to make learning practical include: building in useful exercises so that students have to apply their knowledge to something realistic, providing online surveys or having students develop web pages that act as an information resource for specific topics (Stilborne & Williams, 1996, p. 7). Other suggested activities include:

having examples showing how other people have used the material, using real-world examples in online discussions, using examples from online sources, and using a problem-solution approach to get the students to become active in their own learning (Stilborne & Williams, 1996, p. 4).

### Control

Knowles indicated that it is important that adult learners feel as though they have some control, or at least some options, when learning material (1970, 1978, 1984, 1995). White and Weight said the following about adult learners having control in an online course: “Learner control. With their busy schedules and work and family responsibilities, online students need to be able to stop at any time and to reenter at their convenience” (White & Weight, 2000, p. viii). Williams (1996, pp. 957-983) notes the importance of learner-control in instruction, especially in instructional technologies. Baynton conducted a study in which distance learners from The University of Calgary and Athabasca University were to indicate via a questionnaire how they experienced control during the learning process (1992). She determined that there were six factors to be considered for students to be “in control” of their learning: 1) student competency, 2) teacher/tutor support, 3) choice, 4) flexibility, 5) value orientation (which considers learner attitudes, values, and a predisposition to learning), and 6) access to resources (pp. 22-24). This suggests that the concept of learner “control” is based more on the “*interdependence* of the teaching/learning process and de-emphasizes the isolation suggested by the concept ‘independence’” (p. 29).

### Cognitive Psychology and the Adult Online Learner

The importance of cognitive psychology or cognitivism has been noted in a number of adult learning references (Cross, 1976, p. 112; Long, 1998, p. 29, Knowles, 1978, pp. 61-62; Knox, 1986, p. 23). Holmberg links cognitivism and distance education, including some of the benefits of online learning, in the following way:

Distance education is a concept that covers the learning-teaching activities in the cognitive and/or psycho-motor and affective domains of an individual learner and a supporting organization. It is characterized by non-contiguous communication and can be carried out anywhere and at any time, which makes it attractive to adults with professional and social commitments (Holmberg, 1989, p. 168).

The process of communicating and learning in an online environment was studied by Gunawardena, Lowe and Anderson (1997). These researchers examined “interaction analysis techniques that have been developed for the analysis of computer conferences” and then determined the techniques that worked best in a given situation to address certain questions (p. 398). The computer conference considered in this study was similar to an asynchronous discussion. The researchers were interested in whether knowledge was constructed within the group as a result of communication among the participants and whether the individual participants were able to alter their understanding or generate their own knowledge as a result of interactions within the group (pp. 398-399). The researchers were able to develop an interaction analysis model for described the model in phases, as they saw the group move from sharing and comparing of information (Phase I) through cognitive dissonance (Phase II) to negotiation of meaning (Phase III), the testing

and modification of the proposed construction (Phase IV), and to the application of the newly constructed meaning (Phase V) (1997, pp. 413-414).

Cognitive psychology has a significant influence on online learning (Alessi & Trollip, 2001, pg 19). Aspects of cognitive theory noted by Alessi and Trollip that are the most important to multimedia design and tie in with best practices in setting up and delivering an online course include “those relating to perception and attention, encoding of information, memory, comprehension, active learning, motivation, locus of control, mental models, metacognition, transfer of learning, and individual differences” (2001, p. 20). As mentioned previously, the Generative Learning Model also has been significantly influenced by cognitivism. Research pertaining to the Generative Learning Model with online learners will be discussed in the next section.

#### Research on Online Learning and the Generative Learning Model

The Technology Literacy Challenge Partnership for East Carolina University and Beaufort County Public Schools promote the use of generative learning strategies for helping students with a number of thinking skills, such as elaboration and evaluation, which the strategies of the Generative Learning Model support. They note that technology and the Internet are applicable for generative learning (2002, pp. 4-5).

A Generative Virtual Classroom was developed originally in 1997 at the University of Technology in Sydney, Australia for teacher education in technology and science. Its design was based on the fundamental generative learning principle that “learning is a generative act” (Schaverien, 2000). Since 1997, it has evolved into a dynamic online environment, where a diverse group of learning populations can develop and share “sophisticated ideas about learning” (2000).



Hiltz (1997) wrote about another Virtual Classroom developed at the New Jersey Institute of Technology that used asynchronous learning and supported not only collaborative learning but also “independent learning and generative, active learning techniques that are self-paced by each participant” (1997, p. 3).

One or more of the components or premises of the Generative Learning Model have been noted as significant in promoting learning in the online learning environment. For example, McKenzie provides the name and the URL of a successful online program, named “Looking at Ourselves and Others,” as an excellent example of “learning for understanding,” where “the Peace Corps offers lesson plans that engage students in a deeper exploration of culture... The site provides resources for teachers and students that invite thinking with a global perspective about people and life in other countries” (McKenzie, 2002, p. 136). Another aspect of the Generative Learning Model, which requires that the learner plays an active role in his or her learning, has also been supported by researchers such as Harasim, Hiltz, Teles, and Turoff. These researchers (1995, p. 29) note that

Active learning is a major outcome of learning networks. ‘Attendance’ in a learning network activity both requires and enables active input. Even at the level of mechanics, the learner must keep actively involved; paying attention, pressing keys. However, active learning is more than just pressing keys: it is social and cognitive engagement.

In 1991, Higginbotham-Wheat held a study on how effective learner-generated and experimenter-generated visual and verbal elaborations were in improving the ability to recall, recognize, and infer from newly learned information in a group of

undergraduate education students (p. viii). The findings suggest that a greater level of active, generative processing can be achieved in computer-based instruction through the incorporation of strategies which require verbal elaboration and embedded strategies training, and that performance has been improved by “enhancing the attention, motivation, memory, and generation elements of generative learning” (p. 53).

Higginbotham-Wheat also says, “The generative model of learning is particularly well-suited to the capabilities of the modern microcomputer. The processing capabilities of the computer may be used to develop the *information processing* capabilities of the learner through generative learning activities” (p. 54).

McGuire (2003) explains the significance of the Generative Learning Model in the online learning environment. She notes that because of online learning, many times the teacher acts as a facilitator in the learning process, where students are given direction and helped to learn the information for themselves. However, through the Generative Learning model, students are responsible for constructing their own learning, because Generative learning theory suggests that “students learn best when they make connections, when they make constructs that only they can make for themselves” (McGuire, 2003, p. 1).

In his article, “The World Wide Web and the Dialects of Consciousness,” Ryder (1998, p. 4) discusses the significance of generative learning in an online environment:

The process of mediation is a generative process, which necessarily involves productive labor (Wittrock, 1974; Jonassen, 1994; Furey, 1997).

The subject (i.e learner) relates new information to prior knowledge in the construction of meaning and understanding. The outcome of this activity

is some form of artifact. Generative learning actively constructs its own interpretations of information and draws inferences from them. An effective learning technology would allow for expressions, which connect new ideas to existing knowledge structures. The distinguishing quality of the Web is an open hypertext, a technology which can glue disparate components together in a coherent structure. Using the Web, the subject can appropriate numerous artifacts and electronic tools, crafting them into a structure that is an outgrowth of one's own consciousness.

Barbara Grabowski wrote about the value of using generative learning in online environments. Grabowski and Koszalka wrote about six web-enhanced learning environment strategies that consider the components of the World Wide Web and pedagogical classroom practices. Among the six learning environments noted was generative learning. "*Generative learning* activities must provide the students with an opportunity to mentally 'experiment with' information to create a personal understanding of the subject to be learned" (1999, p. 5). Generative learning addresses the results and context of the instruction because it is "concerned with providing an environment where students can physically and mentally 'experiment' with subject matter and form a relationship between concepts and knowledge" (p. 6). "Online generative learning strategies suggested include having the teacher provide students with world wide web based simulations they can manipulate to learn concepts, provide students with database sites so that students can interpret, make references, or make predictions about what they find. Other online generative learning strategies include having students generate tables,

charts, concept maps, or generate elaborations and analogies about what they find” (pp. 7-8).

In 1999, Grabowski, Koszalka, and McCarthy worked with the NASA Dryden Flight Research Center Education Office to develop a handbook of web-enhanced learning environment strategies. Included in the text are sample lesson designs for planning online activities for generative learning and detailed explanations on what generative learning entails. The following list (Grabowski, Koszalka, & McCarthy, 1999, p. 98) indicates how the World Wide Web can support generative learning:

- *Site elements* provide students with images, animated models, demonstrations, or applications that enable them to draw relationships between new concepts and prerequisite information
- *Site elements* can function to trigger discussion about concepts
- *Organized Sites* can provide students with web-based simulations that they can manipulate to learn concepts
- *Organized Sites* can provide students with real-time databases they can use to interpret, make inferences, or predictions
- *Network elements* can function to promote inquiry and discussion about the relationship between ideas and concepts

#### Using Vignettes in the Online Learning Environment

Aside from Maeder, who already has used vignettes successfully to enhance his online course, the researcher was not able to find many others who published their use of stories or vignettes in their online courses. Two researchers, Björck and Lindstrom (1999) conducted a study of two one-year web-based university courses that considered the

relevance of communication for learning in an online problem based learning environment. In their study, they presented a case that focused on the closing of a Volvo automotive factory in a town, which was dependent upon Volvo as their main employer. Resulting problems included unemployment and people leaving the city. A newspaper article in *Aftonbladet*, a Swedish paper, asked the readers how the government should save the city. These researchers explain that the beginning of the case was the newspaper article and “the introduction to the problem is called the vignette in on-line PBL” (1999, p. 4). In this study, both asynchronous and synchronous discussions were considered. Their conclusions included the following: the most activity with the conferencing system is during the first week of the course, the first steps of the PBL process involved students using synchronous discussions, and the latter part of the PBL process involved students using asynchronous discussions. Also, much interaction among students is required in the early stages of “online PBL” (1999, p. 13).

#### Setup of the Hybrid Online Course

Even though online learning was based on distance education, new models of learning need to be considered. Harasim points out that “The old models came from 19<sup>th</sup> Century technology and they’re based on transmission models. New computer networking technology requires and enables a whole new way of teaching and learning” (Shell, 1994). Two important considerations are apparent in the setup of a hybrid online course: the content and the supporting technology.

Setting up students for success is extremely important in the online environment (Wojnar, 2002a). McKenzie states that there are two fundamental beliefs in andragogy: “The learner may make choices from a rich and varied menu of learning experiences and

possibilities; and 2) learners must take responsibility for planning, acting, and growing” (2001, p. 95). McKenzie says, “Unlike the training models, adult learning is primarily concerned with creating the conditions, as well as the inclination and the competencies to transfer new tools and skills into daily practice. While training usually occurs outside of context and frequently ignores issues of transfer, adult learning is all about melding practice with context” (McKenzie, 2001, p. 95). One strategy he recommends is having students develop a plan to achieve professional goals, which would include having students go through a type of assessment, so that the instructor can determine what their needs are and provide activities to help them meet these goals (McKenzie, 2001, pp. 96-97).

The following set of principles for setting up a learning environment was taken from American Distance Education Consortium (ADEC) (2003, pp. 1-2), Guiding Principles for Distance Teaching and Learning:

- The learning experience must have a clear purpose with tightly focused outcomes and objectives.
- The learner is actively engaged.... Where possible, learning outcomes should relate to real-life experiences through simulation and application.
- Learning environments must include problem-based as well as knowledge-based learning
- Learning experiences should support interaction and the development of communities of interest
- The practice of distance learning contributes to the larger social mission of education and training in a democratic society

The one principle not considered for this study was that the learning environment makes appropriate use of a variety of media. The characteristics of quality web based teaching and learning are listed as follows from the same site:

- Fosters meaning-making, discourse
- Is learner-centered
- Encourages active participation, knowledge construction
- Based on higher level thinking skills: analysis, synthesis, and evaluation
- Promotes active learning
- Provides multiple levels of interaction
- Focuses on real-world, problem solving.

Three of the characteristics not considered from this list include: moving from knowledge transmission to learner-controlled systems, providing for reciprocal teaching, and allowing group collaboration and cooperative learning.

McIsaac and Gunawardena (2004, pp. 373-374) list the important characteristics to be considered when adopting and using technologies for education:

1. Delivery and access: the way in which the technology distributes the learning material to distance learners and the location to which it is distributed – homes, places of work, or local study centers. Student access to technologies in order to participate in the learning process is an important consideration.
2. Control: the extent to which the learner has control over the medium (the extent to which the medium provides flexibility in allowing the students to use it at time and place and in a manner which suits them best.

3. Interaction: the degree to which the technology permits interaction (two-way communication) between the teacher and the student, and among students. ... Technologies that permit two-way interaction can be classified as either synchronous (real-time communication) or asynchronous (time-delayed communication) systems. ... Computer mediated communications (CMC) – including e-mail, bulletin boards, and computer conferencing, are asynchronous technologies that permit two-way communication.
4. Human-machine interface for a particular technology that takes into consideration how the equipment interfaces with the end users: The learner must interact with the interface or the technological medium in order to interact with the content, instructor, and other learners.

The two characteristics not considered for this study are symbolic (or audiovisual) characteristics of the medium and social presence.

This study considered the following components for the design of this online course: course management system, asynchronous discussions, and e-mail correspondence.

A course management system is “a software program that contains a number of integrated instructional functions; [it is] also known as *integrated application software*, *online delivery system*, *educational delivery application*, or *online tool suite*” (Ko & Rossen, 2001, p. 313). The course management system used in the course considered for this study was Blackboard. This technology accounted for all four of the considerations listed previously by McIsaac and Gunawardena. It allowed participants to access the course from home, school, or work, at any time that was convenient for them (as long as



they met the deadlines indicated for the required assignments). Blackboard also had an interface that was easily navigable for the participants and the instructor. One significant benefit in using a course management system is that it allows for one place online where course materials can be posted, asynchronous and synchronous discussions can be held, assignments can be exchanged between the students and the instructor, and e-mail addresses can be stored for online communication.

Within the course management system asynchronous discussions were held, in which participants were able to post responses to the instructor and to each other at any time of the day within a certain designated period of time (such as over the course of two weeks). There are several benefits to asynchronous discussions. Because asynchronous discussions are available 24 hours and seven days a week, everyone's time schedule is accommodated. Harasim says the following about online learning:

Group interactivity distinguishes networks and creates the basis for networked... In the networked, people can act directly to question, probe, or elaborate on any piece of information that is posted. Different perspectives on an issue are generated and shared; the multilogue of the networked can provide a fuller picture. Moreover, group discussion and shared experience are powerful forces toward creating broad understanding (Harasim, 1993, p. 25).

The other type of online interaction used in the online course was e-mail, which allowed for private, individual communication between the instructor and an individual participant, or between participants.

The use of the Generative Learning Model, vignettes, and online courses for adult learners has been discussed. The following sections focus on important learning outcomes for adult learners, such as higher order thinking and academic achievement.

#### Desired Educational Outcomes

Three significant learning outcomes that matter to adults include higher order thinking (Pepicello & Tice, 2000; Wojnar, 2000), academic achievement (Wright, 1994; Evans & Miller, 1997; Thompson, 1997; Kim, 1999; McKeachie, 1999; Wlodkowski, 1999), and finding the learning activities helpful in understanding and applying the knowledge they gain in their own lives (Knowles, 1970, 1978, 1984, 1995; Kolb, 1984; Knox, 1986; Moore & Bogotch, 1993; Jones et al., 1994; Evans & Miller, 1997; Thompson, 1997).

Academic achievement reveals how well an individual has met course goals or course objectives. Therefore, how an instructor develops these goals or objectives is essential. If higher order thinking is considered when an instructor develops these objectives, then the activities used to help students meet these objectives should also require higher order thinking, and thus help students obtain course objectives and achieve academically. Of course, it is also valuable if the students find the learning activities helpful and meaningful in obtaining these course objectives, and helpful in realizing how to apply this knowledge in their own lives.

Because academic achievement relies on how the instructor incorporates higher order thinking into the learning objectives, the next several sections will focus on higher order thinking and academic achievement. The Taxonomy of Educational Objectives, which has been considered a seminal reference in the development of course objectives

and goals (McKeachie, 1999, p. 11; Novak, 1997, p. 401) will be discussed in the next section and includes the levels of higher order thinking that will be considered for this study.

### Assisting Adult Learners in Achieving Higher Order Thinking

#### Overview of the Taxonomy of Educational Objectives

In much of the reviewed literature, when higher order thinking skills are discussed, so is the Taxonomy of Educational Objectives (or Bloom's Taxonomy) (Fischer & Grant, 1983; Wiggins, 1998, pp. 24-25; Driscoll & Freiberg, 2000, pp. 214-216). The Taxonomy of Educational Objectives refers to the cognitive levels of thinking that Benjamin Bloom and his colleagues, Max D. Engelhart, Edward J. Furst, Walker H. Hill, and David R. Krathwohl, developed in 1956: *Taxonomy of Educational Objectives, Handbook 1: Cognitive Domain*. The taxonomy is described as "a classification of education outcomes" (1956, p. 10). The complete taxonomy, from the lowest or most basic cognitive level of thinking to the highest cognitive level of thinking, or as Bloom explains "the arrangement is from the specific and relatively concrete types of behaviors to the more complex and abstract ones" (1956, p. 62) includes knowledge, comprehension, application, analysis, synthesis, and evaluation. The following paragraphs will briefly describe the levels of higher order thinking that will be considered for this study: application, analysis, synthesis, and evaluation.

Bloom and his colleagues describe application in two different ways. They explain that "a demonstration of 'Application' shows that he *will* use it correctly, given an appropriate situation in which no mode of solution is specified" (Bloom et al., 1956, p.

120). Bloom et al. (1956, pp. 120-121) also note that individuals who show application go through the following six steps after the problem is presented:

1. the student either perceives the problem as familiar or unfamiliar
2. the student does some restructuring to make resemblance to a more familiar model more complete or the student uses familiar elements to restructure the problem in a familiar context
3. the student classifies the problem as familiar in type
4. the student selects the appropriate abstraction (theory, principle, idea, method) for the problem type
5. the student uses the abstraction to solve the problem
6. the student provides the solution to the problem

Bloom and his colleagues explain that analysis “emphasizes the breakdown of the material into its constituent parts and detection of the relationships of the parts and of the way they are organized” (Bloom et al., 1956, p. 144). The Taxonomy of Educational Objectives (Bloom et al., 1956, p. 145) includes three examples of analysis:

At one level the student is expected to break down the material into its constituent parts, to identify or classify the *elements* of the communication. At a second level, he is required to make explicit the *relationships* among the elements, to determine their connections and interactions. A third level involves recognition of the *organizational principles*, the arrangement and structure, which hold together the communication as a whole.

Synthesis is defined as “the putting together of elements and parts so as to form a whole” (Bloom et al., 1956, p. 162). Bloom and his colleagues suggest that synthesis is broken down into three subcategories. The first subcategory demonstrates that one can “view the product or performance as essentially *a unique communication*,” in the second subcategory, one can “view the product as *a plan or proposed set of operations* to be carried out,” and in the third subcategory one can “view the product of synthesis as primarily *a set of abstract relations*” (Bloom et al., 1956, pp. 163-164).

The highest cognitive level, evaluation, is “defined as the making of judgments about the value, for some purpose, of ideas, works, solution, material, etc.” (Bloom et al., 1956, p. 185). The judgments made are based on criteria, and they may be qualitative or quantitative. Two types of evaluation are specified. One type can be made primarily on “the basis of internal standards of criticism” which are “concerned with tests of the accuracy of the work as judged by consistency, logical accuracy, and the absence of internal flaws” (Bloom et al., 1956, p. 186). The second type of evaluation is based on external standards of criticism, which involves “criteria derived from a consideration of the *ends* to be served and the appropriateness of specific means for achieving these ends” (Bloom et al., 1956, pp. 186-187)

#### Justifying the Taxonomy of Educational Objectives

Bloom and his colleagues indicate four principles followed in the development of the taxonomy. The first principle followed was that the taxonomy should be developed for existing educational programs and that significant differences be made between the cognitive levels. “First, since the taxonomy is to be used in regard to existing educational units and programs, we are of the opinion that the major distinctions between classes

should reflect, in large part, the distinctions teachers make among student behaviors” (Bloom et al., 1956, p. 13). The second principle followed is that the cognitive levels should be logically developed and that the terms be used consistently throughout the taxonomy. “A second principle is that the taxonomy should be logically developed and internally consistent. Thus, each term should be defined and used in a consistent way throughout the taxonomy. In addition, each category should permit logical subdivisions which can be clearly defined and further subdivided to the extent that appears necessary and useful” (Bloom et al., 1956, p. 14). The third principle followed was that the taxonomy should be consistent with their current understanding of psychological phenomena (p. 14). Finally, it was decided that the classification would be described neutrally, so that no value judgments on any parts of the taxonomy would be made (p. 14).

#### The Taxonomy of Educational Objectives and Adult Learners

Originally, this taxonomy was “developed to assist college and university examiners” but “has been transformed into a basic reference for all educators worldwide” (Bloom, 1994, p. 1). Much research has been done with children in K-12 environments; however, the researcher was able to find some research regarding the use of higher order thinking according to Bloom’s Taxonomy and adults. Wojnar (2000) focused on designing an online learning environment that required adults to use higher order thinking. The results of Wojnar’s study showed that “higher levels of Bloom’s taxonomy were indeed reflected through online student journal writes, formal papers, and synchronous chats” (2002b, pp. 7-8). The table that Wojnar developed for determining how Bloom’s taxonomy was evident in students work will be used for this study.

Odom (1998) refers to the Taxonomy of Educational Objectives when addressing the importance of integrating crucial thinking skills into an Adult Basic Education curriculum. She notes that analysis, synthesis, and evaluation are high level critical thinking skills and because these critical thinking skills are used nearly everyday in making important decisions, the development of these skills via appropriate activities in the curriculum is essential. “Providing activities early in the curriculum in which students are to think critically not only sets the stage for academic success, but is also a great motivator and retention tool. Students can see directly how what they are learning in class impacts their ‘real’ life – and they can begin to use these new skills right away” (Odom, 1998, p. 5).

One study held by van der Wal and van der Wal (2003) researched the assessment of life skills for young adults, aged 18-22, in a working program for an industrial organization in South Africa. In evaluating the alternative assessment used, (a collage of pictures and concepts to which the learners were required to respond), Bloom’s taxonomy of the cognitive domain was used to classify the cognitive learning outcomes, which did include the higher levels of thinking or higher order thinking such as analysis, synthesis, and evaluation.

Norwalk (2000) interviewed English-as-a-Second-Language (ESL) students to see how they managed their learning and what they needed in terms of learning strategies. Norwalk reported that these learners coordinated their personal needs, cognitive strategies, and prior learning experiences in order to manage their learning. Even though recall and comprehension was included in their cognitive learning strategies, higher learning strategies or higher levels of thinking that were missing, but were considered as

necessary in giving students more speaking opportunities in class, were analysis, synthesis, and evaluation.

Another example of the use of Taxonomy of Educational Objectives to identify and define higher order thinking skills is the Implementation Handbook for Family and Consumer Sciences: Including Scope & Sequence, Program Evaluation, and Critical Thinking Process (2000), written by Deborah Pohl, Cynthia Arendt, and Victoria Shahan. They developed the handbook assist in the development of quality family and consumer sciences programs for Missouri school districts so that students could be prepared to think critically and ethically and eventually become successful family, career, and community leaders. Pohl, Arendt, and Shahan considered the Taxonomy of Educational Objectives significant in describing and explaining the program design, implementation, and evaluation. They also included the diagram of higher order thinking skills as illustrated in the Taxonomy of Educational Objectives.

#### Higher Order Thinking Considered in the Online Environment

Many educators who teach online have realized the importance of ensuring that their students are achieving higher order thinking. Gunawardena and McIsaac note that when talking about the interaction that occurs in online courses, which can involve synchronous and asynchronous discussion, note how significant higher order thinking is. “It is the ability to facilitate communities of inquiry to engage in higher order thinking in many disciplines that is one of the most important contributions of this medium for online learning” (2004, p. 381).

Pepicello and Tice note the importance of making sure online students at the professional level develop thinking skills that relate to some of the higher levels of



Bloom's taxonomy, such as analysis, synthesis, and application (Pepicello & Tice, 2000, p. 54).

Boyd, Murphrey, and Rogers (2001) conducted a study that observed adult learners in an asynchronous online learning environment. The study focused on determining if the "use of an asynchronously delivered simulation activity to teach leadership styles and ethics theory would improve learning". The study considered Bloom's Taxonomy of Learning Objectives, Cognitive Domain, and it was determined that "computer-based simulations have the ability to improve student learning of leadership concepts at higher cognitive levels while allowing students to apply theory to real world situations" (p. 183).

Wilcox and Wojnar (2000) stressed the importance of higher order thinking in the online environment. Wilcox and Wojnar worked together on a model for online courses that considers best practices (developed by Zemelman, Daniels & Hyde in 1998) and "backward design (described by Wiggins and McTigh (1998) who credit it to Tyler (1949)" (Wilcox & Wojnar, 2000, p. 7) to "create a high-quality, pedagogically sound online course" (Wilcox & Wojnar, 2000, p. 2). They found success in having adult students achieve higher order thinking by doing the following:

Bloom's taxonomy was used throughout the course to identify and develop applications of higher level thinking through structured activities. It was also used to critique objectives and oral questioning techniques, and in designing tasks. We found that when we raised questions to a higher level through prompts or modeling, student answers were at a higher level and they seemed more engaged. Entries in academic "thinking journals,"

a required part of students' portfolio where they took time to analyze and synthesize content from texts and predict how the information might be used in the classroom, often provided evidence of students' higher level thinking (Wilcox & Wojnar, 2000, p. 11).

Sener (1997) notes that even though asynchronous learning environments (ALNs) are "not inherently generative learning environments," they can be designed to support this type of learning by "focusing on higher-order skill development".

### Taxonomy of Educational Objectives and Cognitive Psychology

The Taxonomy of Educational Objectives developed as a result of Behaviorist psychology; however, there is a significant link between the taxonomy and Cognitive Psychology. Novak explains that "Behavioral Psychology was the foundation for Bloom's (1956) *Taxonomy of Educational Objectives* and later the hugely popular book by Mager, (1962), *Preparing Objectives for Programmed Instruction*" (1997, p. 401).

Because the taxonomy focused on student behavior that showed students levels thinking, the taxonomy provided a link to cognitivism. Right around 1956, cognitivism was starting to take hold in the educational research area (Rohwer & Sloane, 1994, p. 41). Jerome Bruner refers to 1956 as "the mythical birthday of the cognitive revolution" (Bruner, 1992, p. 781). Rohwer and Sloane also explain that there were several other individuals that contributed to the movement in cognitive psychology. For example, Miller, Galanter, and Pribram, in *Plans and the Structure of Behavior* (1960), explain how images and plans contribute significantly to an individual's behavior, and how these concepts are explained in cognitive and behavior psychology. Rohwer and Sloan also

noted Piaget's cognitive developmental theory that was becoming more influential around this time (1994, pp. 41-42).

Bloom and his colleagues explain the following about the Taxonomy of Educational Objectives: "Teachers building curriculum should find here a range of possible educational goals or outcomes in the cognitive area ('cognitive' is used to include activities such as remembering and recalling knowledge, thinking, problem solving, creating)" (Bloom et al., 1956, p. 2). This indicates that the cognitive levels were based on student performance, or how students were able to show what they were thinking, and how they were thinking. That is, the Taxonomy helped teachers start thinking about what activities they would have to incorporate in the classroom to get students to think and process information at certain levels. "The Taxonomy explicitly recognizes and gives names to classes of cognitive behaviors that extend well beyond rote memory. The Taxonomy exemplifies concern for transfer of learning, application as well as acquisition of information, and general modes of behavior which cannot be reduced to stimulus-response bonds" (Airasian, 1994, p. 85).

Cognitive psychology is concerned also with the process students go through in order to learn. The Taxonomy helped facilitate how teachers could tell what part of the cognitive process students were with their learning. In other words, they could tell if the students only had knowledge or comprehension of a subject, but were not able to apply what they had learned.

Cognitive psychology also is concerned with learning strategies. The Taxonomy, in a sense, forced teachers who considered it to also consider different learning strategies for their students so that they could reach these different cognitive levels.

Even though there is a hierarchical structure of the Taxonomy, so that the cognitive levels were presented from the lowest to the highest, or from the most concrete to the most abstract, Bloom and his colleagues did understand that students could obtain the higher levels of thinking, such as evaluation, before obtaining the lower levels, such as comprehension (Bloom et al., 1956, p. 185). They also understood that learning is cumulative (Bloom et al., 1956, p. 16; Rowher & Sloane, 1994, p. 47). Rowher and Sloane explain, “The structure claimed for the hierarchy, then, *resembles* a hierarchy, and the learning that makes possible the attainment of the objectives is *cumulative-like*” (1994, p. 47).

The transfer of learning is another essential goal for cognitive psychologists. Two types of transfer are considered in the Taxonomy. Vertical transfer, which implies that “the learning that leads to the attainment of lower-level objectives transfer to or facilitates the learning that leads to related higher-level objectives” (Rohwer & Sloane, 1994, p. 48). Horizontal transfer, in which obtaining the higher levels of thinking can assist students in working effectively on entirely new and different tasks, was also considered important to Bloom and his colleagues and that transfer was “an essential goal of education, and eminently available as well” (Rohwer & Sloane, 1994, p. 48).

When considering the generalizability of higher order skills and abilities, Bloom and his colleagues believed that the Taxonomy could prepare students by helping them develop thinking skills or cognitive strategies that would help them in new situations. (Rohwer & Sloane, 1994, p. 48; Bloom et al., 1956, p. 40). That is, once students realized how to achieve, for example, analysis or synthesis in one subject or area, they would be able to do this in other subjects or areas as well.

Gagné, Briggs, and Wager (1992) integrated a framework of learning outcomes that included all three domains: cognitive, affective, and psychomotor. Cognitive psychology principles, which take into account memory, knowledge, motivation, attitude, and strategies for learning, are incorporated. This framework (1992, pp. 12-13) includes the following:

- *Intellectual skills*: Which permit the learner to carry out symbolically controlled procedures
- *Cognitive strategies*: The means by which learners exercise control over their own learning purposes
- *Verbal information*: Which includes the facts and organized “knowledge of the world” stored in the learner’s memory
- *Attitude*: The internal states that influence the personal action choices a learner makes
- *Motor skills*: The movements of skeletal muscles organized to accomplish purposeful actions

#### Taxonomy of Educational Objectives and the Generative Learning Model

After reviewing the literature, it is evident that both the Taxonomy of Educational Objectives and the Generative Learning Model have been influenced by cognitive psychology. Now, it is important to establish the link between the Taxonomy of Educational Objectives and the Generative Learning Model.

As explained previously, one main premise of the Generative Learning Model is that the learner is active in the learning process. The Taxonomy of Educational Objectives demonstrates how the learner is active in the different cognitive levels of

thinking. That is, for each level of the Taxonomy, there is an explanation or description of what the student needs to do to acquire these levels. Even though The Taxonomy of Educational Objectives was published in 1956, during the time when Behaviorism was considered to be the only acceptable approach to education (that is, Cognitivism was certainly not accepted in North America) (Novak, 1997, p. 402), the taxonomy did shift the concern about teacher's actions to the concern for what students learned from those actions. "As a result of this shift, there was a need to define clearly the intended learning outcomes in terms of changes in students' overt behavior" (Bloom, 1994, p. 6). Therefore, the taxonomy did, to a certain degree, focus on the learner actively achieving certain cognitive levels in his or her learning.

Wittrock states that "cognitive theory implies that learning can be predicted and understood in terms of what the learners bring to the learning situation, how they relate the stimuli to their memories, and what they generate from their previous experiences" (Wittrock, 1974a, p. 93). Bloom (1994, p. 8) says the following about the learner and his abilities:

The more modern view of the learner is that his or her ability is neither permanent nor highly stable; rather, it is highly alterable when proper stimulation and experience are provided. Furthermore, the teaching of higher mental processes need not be limited to the gifted or otherwise 'deserving'. Finally, recent research in the area of cognitive psychology will likely enhance our understanding of higher mental processes. Past research has demonstrated that as higher mental processes are emphasized and taught, lower level skill can be learned concomitantly.

Another important focus is on the transfer of learning. As explained previously, horizontal transfer is similar to scaffolding, where activities and learning are built upon one another, and vertical transfer is the transfer of learning into new experiences. Wittrock considered transfer a very important part of the Generative Learning Model, and would also consider both of these types of transfer significant as well. Wittrock and Mayer (1996) wrote about the different types of transfer, defining transfer as that which “occurs when a person’s prior experience and knowledge affect learning or problem solving in a new situation. Thus, transfer refers to the effect of knowledge that was learned in a previous situation (task A) on learning or performance in a new situation (task B)” (1996, p. 48). They note that historically, there have been four views of transfer: “general transfer of general skills, specific transfer of specific behaviors, specific transfer of general skills, and metacognitive control of general and specific strategies” (p. 49). Also, “when transfer of a general principle or pattern is a goal of instruction, the preferred instructional method is one that leads to meaningful learning... meaningful learning is a process in which learners must actively construct their own learning outcomes (Mayer & Wittrock, 1996, p. 53). By having different types of activities for the different parts of the model, such as attention, motivation, knowledge, generation, and metacognition, there is a type of scaffolding, or building upon learning within the model as well.

The Generative Learning Theory Page, provided by George Mason University, explains the Generative Learning Model encourages elaboration, which “involves the connection of new material to information or ideas already in the learner’s mind. The

goal of elaboration is to add ideas to new information (Bloom's synthesis of information)" (George Mason University Instructional Technology Program, n.d.).

When considering the different generative learning activities, Grabowski sees different levels of Bloom's taxonomy in different generative learning activities. She illustrates in a table how different levels of generative learning activities, such as integration and translation, correlate with the levels of higher order thinking according to the Taxonomy. Specifically, she shows how integration considers activities such as creating relevant examples (which would be application in Bloom's taxonomy) and synthesizing, and translation considers activities such as evaluating and analyzing (Grabowski, 1996, p. 914; 2004, p. 738).

Dombrowski explains the link between higher order thinking skills and the Generative Learning Model: "Generative problems motivate open-ended inquiry, require analysis and synthesis, and have multiple solutions. Students are challenged to conduct higher order thinking through the generation, evaluation, and creation of solutions to real-world problems" (1997, p. 23).

Sener (1997) notes that one of the major outcomes of generative learning is "higher-order skill development such as problem solving, learning and reasoning skills." Even though Sener says that the practice of generative learning is primarily focused on K-12 at this time, there is much potential for its application in "tertiary education".

### Higher Order Thinking and the Use of Stories

Researchers have indicated that the use of stories, whether read or written, can lead to higher order thinking, depending on how they are studied or on what types of questions are asked. Hingorani compared the use of two different types of case studies



with a group of college students from the Building Science Department and the College of Business at Auburn University, Alabama (1995). Hingorani compared the written case study (WRICS) method, and the lecture method, to the Annotated Still Image Case Study (ASICS), which is an active, situational and narrative teaching method that engaged students in problem-solving and decision making processes, involved narration of a case with the aid of still-images by a manager from a construction site located 100 miles away from the classroom. The similarities between ASICS and WRICS include the following: both bring real-life situations to the classroom; both are active learning methods and facilitate creation of zone of proximal development; both enhance student's higher-level cognitive skills; and both require skilled instructors. The differences between ASICS and WRICS are the following: WRICS reduces uncertainty while ASICS is a method that resolves ambiguity; WRICS captures a 1-2 year old issue while ASICS presents a live, current issue; WRICS can be taught in an ordinary classroom while ASICS requires a special setup and equipment; WRICS makes use of printed documents while ASICS uses color images with an annotating device; and WRICS is an inexpensive teaching method while ASICS is relatively expensive. The significant findings include the following: even though case study methods were more effective for imparting higher level cognitive skills, the ASICS investigated in this research was more effective than WRICS for imparting such skills, and ASICS, "due to its focus on real-world issues, visual content, and currency was found to be more useful, challenging, and attractive than the written case study" (p. v).

Ruediger and Lorance wrote an article that described a university teaching training program for pre-service teachers of students with mental retardation. The

program emphasized components such as adult learning theory and case method teaching to “build the bridge research and practice” (p. 8). In this article, they explained how they applied Bloom’s Taxonomy to the curriculum.

Pepicello and Tice (2000) discuss how the University of Phoenix have developed goals for their professional online learners. They explain the importance of having professionals develop a “repertoire of thinking strategies that will enable them to acquire, analyze, synthesize, and evaluate information. This is accomplished in *Skills for Professional Development* by having students analyze case studies in groups. Case studies are not only related to the educational experiences but they also include issues related to the workplace” (Pepicello & Tice, 2000, p. 54). Again, the higher thinking levels from Bloom’s Taxonomy were referenced.

Another study that observed and related the use of stories to higher order thinking as per Bloom’s Taxonomy was done by Guthrie (2000), who worked with Head Start parents and adult basic education/high school equivalency program students. She noted the following: “Critical thinking [was] taking place as my students were spontaneously discussing the story. They were able to take the plot and relate it to a real-life incident... They were using several critical thinking skills effortlessly” (p. 2).

### Academic Achievement

#### Academic Achievement and Taxonomy of Educational Objectives

Academic achievement is based on how successful learners achieve the objectives or learning goals of a course. Brookhart defines achievement as “student performance of the learning goals on which their classroom lessons were based” (2004, p. 7). In this study, academic achievement is determined in this study by the individual grades

assigned in certain types of alternative assessments, such as creating a diagram, creating a rubric, and answering teacher-generated vignettes.

When these goals are written so that they match the same criteria as the higher levels of cognitive thinking in Bloom's Taxonomy, then these goals are based on higher order thinking, and hence academic achievement is based on higher order thinking.

Several individuals have provided information on how learning objectives should be written. The Taxonomy of Educational Objectives has been referenced by many different individuals (Popham, 1993; Gagne, Briggs, & Wager, 1992; DiVesta, 1989, p. 42; Novak, 1997, p. 401; Wiggins, 1998; Oosterhof, 1999) when discussing how to develop meaningful learning goals and course objectives that are relevant to student achievement.

Another work supporting Bloom's Taxonomy which provides details on how to go about writing instructional objectives is *Preparing Instructional Objectives*, written by Robert Mager (1962). Mager provides different ways to go about developing meaningful objectives, based on what the instructor wants the student to know, do, etc. by the end of the course. Mager refers the reader to the Taxonomy of Educational Objectives for more information regarding the types of objectives to select from and good examples of testing situations for each (1962, p. 51) for the effective development of learning goals and objectives.

Norris M. Sanders, who wrote *Classroom Questions: What Kinds?* in 1966, also emphasized the importance of using the Taxonomy of Educational Objectives when designing questions. He provides definitions and examples of each cognitive level, and

then provides questions and answers highlighting the most significant parts of each chapter.

### Defining Academic Achievement and Other Related Terms

There are several terms to consider when discussing academic achievement. Airasian explains that “the process of collecting, synthesizing, and interpreting information to aid in decision making is called assessment” (2001, p. 8), “a **test** is a formal, systematic, usually paper-and-pencil procedure used to gather information about pupil’s behavior” (2001, p. 9), “**measurement** is the process of quantifying or assigning a number to pupil performance” (2001, p. 9), **evaluation** involves judging the quality of a pupil’s performance or determining a possible course of action” (2001, p. 9). All of these components come together in determining a student’s academic achievement.

### Academic Achievement and Adults

Academic achievement is important to adults, especially those pursuing a degree in post-secondary education (Evans & Miller, 1997; Thompson, 1997; Kim, 1999; McKeachie, 1999; Wlodkowski, 1999). Wright explains the importance of grades to this population as follows:

Grades in higher education are the currency of our culture. They represent the medium in which we deal with students in the bargains made concerning their learning. Grades become the “pay” that stimulates students to produce great effort in accomplishing learning tasks (Wright, 1994, p. 439).

Grades and other aspects of classroom assessment influence student motivation to learn and provide information to students that they can use in their learning (Crooks,

1988; Black & Wiliam, 1998; Brookhart, 2004). Brookhart notes, “These two purposes are related, since the availability of various kinds of information influences students’ decision about how and why to use the information” (2004, p. 36).

But, how does one go about determining grades or academic achievement? As indicated previously, terms referring to assessment that is not standardized but is meaningful to the learner, such as alternative assessment, performance assessment and authentic assessment have been used since the 1990’s, and have gained popularity, especially in assessing adults. Oosterhof explains that alternative assessments are often authentic assessments “because they assess the ultimate skills for which formal instruction exists” (1999, p.131). Several researchers such as Airasian (2001, p. 229) and Oosterhof (1999, p. 151) equate the terms performance and authentic assessment. For the purpose of this study, the term performance assessments will be used, because the focus is on students who are asked to perform authentic tasks.

The term “performance assessment” is defined and explained in different ways. Airasian (2001) describes performance assessments as “Assessments in which pupils carry out an activity or produce a product in order to demonstrate their learning” (pp. 228-229). Wiggins says that “assessment is authentic when we anchor testing in the kind of work real people do, rather than merely eliciting easy-to-score responses to simple questions. Authentic assessment is true assessment of *performance* because we thereby learn whether students can intelligently use what they have learned in situations that increasingly approximate adult situations, and whether they can innovate in new situations” (1998, p. 21). Brookhart defines performance assessments as “observation and judgment of student performance on a task. We can assess a process (we can observe

an act in which the student engages) or a product (we can observe something the student makes) (Brookhart, 2004, p. 58).

### Performance Assessments for Adults

In his report, *Equipped for the Future Assessment Report: How Instructors Can Support Adult Learners Through Performance-Based Assessment*, Sri Ananda points to scenarios as a significant performance method for online adult learners. Sri Ananda is the co-director of the Assessment and Standards Development Series program at WestEd, which is the educational research and development organization designated by the U.S. Department of Education as the “Assessment Specialty Regional Laboratory” (2000, p. 1). Sri Ananda (2001, p. 3) links cognitive processes, such as those used in the Generative Learning Model, to performance assessments such as scenarios:

...performance-based assessment includes cognitively demanding, hands-on activities. It aims to stimulate learners to think, react to new situations, review, revise, and evaluate their work, and communication in verbal and visual ways. Examples of performance-based assessment methods include problem-solving scenarios, journals, projects, performances, computer simulation tasks, and portfolios.

Robert Campbell (1999, p. 55) developed an instructional design model for creating problem based learning, and included a number of alternative assessments, such as performance assessment and portfolio assessment. He noted that alternative assessments help instructors answer questions such as:

1. How well are students constructing knowledge structures allowing them to think like experts in the domain under investigation?

2. How can the teacher measure students' abilities to apply information to relevant problems within a specified domain?
3. How can the instructor help students to learn better?

He also incorporated instructional systems design, problem based learning (which includes the use of cases or scenarios) and constructivist principles, all of which helped to contribute to the development of a significant model approved by a number of experts (p. 132).

Davidson (1992) determined or assessed the level of knowledge North Carolina Principal Fellows had of special education law by using twenty-one scenario-based statements that were based on IDEA provisions. It was determined that the Principal Fellows "demonstrated difficulty with four of the seven provisions" (Davidson, 1992, p. iii).

#### Assessments Used in this Study

As Reeves has reminded everyone, "There is more than one way to 'show what you know'" (2002, p. 3). This study uses performance assessments, such as having students respond to teacher-generated vignettes, having students create vignettes, having students develop and present lessons, having students create diagrams, and having students create rubrics, which tell "potential performers and judges just what elements of performance matter most and how the work to be judged will be distinguished in terms of relative quality" (Wiggins, 1998, p. 153). These assignments were measured or evaluated by scoring guides and rubrics. This study focuses on the following assessments for academic achievement: student's responses to teacher-generated vignettes, students

creating diagrams, and students creating rubrics. The following sections provide more background on performance assessments and how they are evaluated.

There are several benefits in using performance assessments. Wiggins says that good performance assessments have the following characteristics: 1) are realistic, 2) require judgment and innovation, 3) ask students to “do” the subject, 4) replicate or simulate the contexts in which adults are ‘tested’ in their professional and personal life, 5) “assess the student’s ability to efficiently and effectively use a repertoire of knowledge and skill to negotiate a complex task,” and 6) “allow appropriate opportunities to rehearse, practice, consult resources, and get feedback on and refine performances and products” (1998, pp. 22-24). Stephen White explains, “**Performance assessments** provide opportunities to leverage standards from other disciplines to support the most essential power standards and indicators. Teachers report the process allows them to experience ‘Less really is More’ and deep is better than the ‘coverage’ approach so common for so long” (2003, p. 4). Performance assessments can also address higher order thinking. Brookhart noted, “performance assessments are good for assessing in-depth thinking or study in one area, or for assessing skills or products” (Brookhart, 2004, p. 59). Because higher order thinking is considered in this study, performance assessments are appropriate for this study as well. Among the five features of performance assessments, Hambleton (1996, p. 902) includes their ability to address higher-level cognitive skills:

- Performance tests are intended to assess what it is that students know *and* can do, with the emphasis on “doing.”



- Performance tests should use direct methods of assessment (e.g., writing samples to assess writing, and oral presentation to assess speaking skills).
- Performance tests should have a high degree of realism about them (that is, fidelity should be high). In reading assessments, for example, students would be expected to read reasonably lengthy passages (perhaps several pages) prior to answering questions, and in mathematics tests, students would be expected to work with rulers, protractors, calculators, and so forth, in solving mathematics problems.
- Performance tests might involve (a) activities for which there is no correct answer, (b) assessing groups rather than individuals (e.g., a group putting on a play), (c) testing that would continue over an extended period of time, or (d) self evaluation of performances, projects, and so forth.
- Performance tests are likely to use open-ended tasks aimed at assessing higher-level cognitive skills.

The performance assessments considered for this course that the study considered were student responses to teacher-generated vignettes, student-created diagrams, and student-created rubrics.

As explained earlier, Scriven differentiated between formative and summative evaluations in 1966. Scriven (1966, pp. 4-7) wrote the following regarding these types of evaluation:

One role that has often and sensibly been assigned to evaluation is as an important part of the process of curriculum *development* (another is teacher self-improvement). ... with respect to this role, several types of

questions (goals) may be raised, such as: Is the curriculum at this point really getting across the distinction between prejudice and commitment?, Is it taking too large a proportion of the available time to make this point?, etc. In another role, the evaluation process may serve to enable administrators to decide whether the entire finished curriculum, refined by the use of the evaluation process in its first role, represents a sufficiently significant advance, on the available alternatives to justify the expense of adoption by a school system. ... Educational projects, particularly curricular ones, clearly must attempt to make best use of evaluation in both these roles. As a matter of terminology, I think that novel terms are worthwhile here, to avoid inappropriate connotations, and I propose to use the terms “formative” and “summative” to qualify evaluation in these roles.

A few years later, in 1971, Bloom, Hastings, and Madaus also differentiate formative and summative evaluations, and explain how both evaluations should be used in the teaching and learning process. Again, in 1981, Bloom, Hastings, and Madaus stress the importance of formative and summative evaluations, and to this they add diagnostic evaluations. This study focuses on formative evaluations, or evaluations that occur during instruction. Summative evaluations were not considered for this study.

The instructor evaluated these performance assessments by the use of scoring guides and rubrics. Research has shown these tools to be extremely valuable in evaluating these types of assessments. White says, “Scoring guides simplify record-keeping and engage students in the process of judging quality and evaluating their work, critical, higher order skills in Bloom’s taxonomy” (2003, p. 4). Reeves, who is the

chairman and founder of the International Center for Educational Accountability and the Center for Performance Assessment, says the following about scoring guides and rubrics: “In effectively crafted standards-based performance assessments, the criteria for evaluation are elaborated in a rubric, or scoring guide. These criteria, best expressed in student-accessible language, give students feedback not only on the extent to which their performance was proficient but also on how to improve. The best rubrics amplify the descriptions of nonproficient scores with specific guidance for improvement” (Reeves, 2002, p. 42). Airasian (2001, p. 285) suggested the following steps in developing a rubric:

1. Select a performance that will be taught
2. State performance and criteria
3. Decide on the number of scoring levels
4. Develop and describe the highest level of performance
5. State descriptions of the remaining scoring levels
6. Compare each pupil’s performance to each scoring level
7. Select the scoring level closest to the pupils’ performance
8. Grade pupil performance

Characteristics of a good assessment and evaluation process are validity and reliability. Linn, Baker, and Dunbar (1991) suggest several criteria are suggested considering validity in assessments:

1. consequences
2. fairness
3. transfer and generalizability

4. cognitive complexity
5. content quality
6. content coverage
7. meaningfulness

Cost and efficiency were included as one of the criteria, but will not be considered for the purposes of this study.

Performance assessments, scoring guides and rubrics comprise, in a sense, an educational accountability system. Reeves noted that “The central purpose of accountability is the improvement of student achievement....Holistic accountability includes not only effects but causes. It includes not only variables within the school but many factors that significantly influences student achievement” (2001, p. 1). Ross (2002, p. 4) noted the following in the development of an assessment and evaluation process:

1. Information on student achievement. Test scores are included here, but educators need to include other assessments, such as evaluations of student writing and appraisals of student proficiency conducted by the classroom teachers.
2. Information should be included regarding the underlying causes of student achievement. There are a wide variety of variables, but at the very least the system would include data on attendance, teacher certification, and curriculum. Armed with this knowledge, educators can better affect future outcomes.
3. A combination of qualitative and quantitative information should be utilized. Knowing the ‘story behind the numbers’ allows for deeper understanding,

which in turn provides the basis for better decision making as it relates to improving student achievement.

#### Academic Achievement and the Generative Learning Model

Wittrock links student thought processes with achievement by explaining that there are “two consecutive and reciprocally related links between teaching and students achievement. The first link is between teaching and student cognition. The second link is between student cognition and learning or achievement” (Wittrock, 1986, p. 297).

Wittrock (1987, p. 32) also noted six other research implications on cognitive processes that led to understanding how teaching influences student achievement:

1. Teachers should learn the relevant knowledge, beliefs, and models that students bring to the classroom. This background knowledge is critical in learning and in designing effective teaching.
2. Students should be taught that they can succeed in school through applying effort, through using appropriate learning strategies, and through taking responsibility for learning. Conversely, teachers should learn to take responsibility for teaching and to feel that they can succeed with their students.
3. Teachers can improve achievement in school by learning to focus student attention upon the subject matter. Students who have difficulty attending to schoolwork can sometimes be taught strategies for controlling their attention.
4. Memory of factual information presented in class can be improved by teaching students to relate its content to their knowledge and experience.

5. Comprehension of concepts, principles, and large units of text can be enhanced by teaching students to generate (a) conceptual relations across the sentences, paragraphs, and sections of the information they are learning, and b) relations between the information and their knowledge and experience.
6. Achievement in school can be improved, with some students, by teaching them to be aware of, to monitor, and to try to control their thought processes that are relevant to learning.

Wittrock says that the Generative Learning Model takes into account all of these things by considering the student thought processes and by leading students to construct meaningful learning experiences. “The model that underlies and unites these implications is based on the principle that learning is a generative process. Students learn what the instruction causes them to construct, using their knowledge, beliefs, and experiences. Learners create meaning” (Wittrock, 1987, p. 32).

### Summary

This literature review revealed the characteristics and needs of adult learners, described significant adult learning theories and principles, and indicated the important elements of a learning program designed for adults. The literature indicated that adult learners do differ from children due to their needs and place in life, and that the learning environment needs to be set up to accommodate these adult learners.

The Generative Learning Model, which highlights the importance of attention, motivation, knowledge, generation, and metacognition, was very appropriately applied to adult learners in this environment. In fact, as the literature shows, many of the principles of the Generative Learning Model, such as considering student’s prior knowledge and

having students actively engaged in learning activities and having students transfer their knowledge, correspond to the educational theories and principles for adult learners.

The use of vignettes, which involve generation of knowledge, works well with the Generative Model of learning, and includes some of the same characteristics as case studies and scenarios, which have been used successfully with adults in the transference of understanding.

Research shows that the Generative Learning Model may be used successfully in an online learning environment, and that a hybrid course including both online activities and face-to-face meetings may benefit adult learners greatly. Online courses, especially when designed through a course management system such as Blackboard, make it easier for the instructor and students to exchange information and converse in one significant area online. By including asynchronous discussions, and using e-mail, students are able to access information at any time, as well as take part in discussions over a period of time, instead of having to take part in discussions at a certain time and place, as in traditional classroom settings. Including face-to-face meetings allow students to get to know one another as well as the instructor before communicating online, as well as determine how the course goals can meet the needs and goals of the students.

When considering significant outcomes such as higher order thinking and academic achievement, it is important to plan meaningful learning activities and alternative assessments that require higher order thinking and that they find transferable to their own situations. Outcomes, such as higher order thinking and academic achievement need to be planned for by ensuring that adults have a supportive learning environment with meaningful activities and assessments.

## CHAPTER 3

### DESIGN OF THE STUDY

#### Research Procedures

This case study investigated the use of vignettes as a teaching strategy within the Generative Learning Model in an online course. Its purpose was to explore how vignettes affect academic achievement, how vignettes enhance higher order thinking, and whether or not vignettes are preferred over other teaching strategies and learning activities. The following research questions were developed according to the precept: “In qualitative studies, research questions typically orient to cases or phenomena, seeking patterns of unanticipated as well as expected relationships” (Stake, 1995, p. 41). The research questions considered for this study include:

1. Will the student completion of teacher-provided vignettes, as they are presented in a hybrid online course designed with the Generative Learning Model, enhance academic achievement as measured in the following types of student work/ activities:
  - Asynchronous discussions
  - Diagrams
  - Rubrics
2. Will the writing of learner-generated vignettes, as they are presented in a hybrid online course designed with the Generative Learning Model, promote higher order thinking including application, analysis, synthesis, and evaluation as measured in three different asynchronous discussions?



3. Do students prefer vignettes to lectures, teacher demonstrations, student demonstrations, projects, online slide presentations or online discussions as shown in the following:

- Student reflective learning logs
- Questionnaire (distributed at the end of the course)

This chapter presents the purpose of the study, the results of two pilot studies, and a description of the participant population, instructional considerations, procedure, instrumentation, data collection, and data analysis.

### Purpose

The purpose of this case study was to describe, both qualitatively and quantitatively, how vignettes enhanced academic achievement and higher order thinking in an adult online course, and whether participants preferred vignettes as a teaching strategy and learning activity. The case study involved master's level students enrolled in a three-credit course in the School of Education at Duquesne University, Instructional Techniques, GITED 631. The course was an elective for students in the Instructional Technology program and required for those enrolled in other Graduate Education programs. The descriptive case study method was selected because sufficient enrollment for an experimental design was not possible and it was likely that the data from in-depth case studies and descriptive statistics would be valuable. "Case study research, and in particular qualitative case study, is an ideal design for understanding and interpreting observations of educational phenomena" (Merriam, 1988, p. 2). "The case study, used alone or as part of a large-scale quantitative study, is the method of choice for studying interventions or innovations. And education is replete with these" (Lancy, 1993, p. 140).

The intent of this descriptive case study was to present “a complete description of a phenomenon within its context” (Yin, 1993, p. 5). The researcher must “define a complete and appropriate description” when doing descriptive case studies (Yin, 1993 p. 4). The researcher considered the following suggestions by Yin (1993, p. 22):

1. Where the description started and when it ended, (i.e., identify the major unit of analysis for the case study);
2. What critical ingredients the description should include and exclude, (i.e., decide whether a single case or multiple cases were to be the subject of the study);
3. How to match the researcher’s theory with what needed to be described, (i.e., identifying cases that were critical, topical, or accessible);
4. How the collection of multiple sources of evidence converged on the same set of issues, (i.e., choosing a one-time data collection and/or a more extended data collection period).

The major unit of analysis in this study was a collection of student artifacts gathered during the Instructional Techniques course. These artifacts included the following student work: responses to teacher-generated vignettes posted in asynchronous discussions, diagrams, rubrics, learner-generated vignettes, learning logs, and questionnaires. The collection of case studies was drawn from students who agreed to be participants in the study. The collection strategy for this study was a one-time data collection during the fall of 2003.

“To reduce the likelihood of misinterpretation, researchers employ various procedures... for qualitative casework, these procedures generally are called *triangulation*” (Stake, 2000, p. 443). The method of triangulation used in this study is described in more detail in the “Instrumentation” section.

This study reports the scores of the participant artifacts, such as participants’ responses to teacher-generated vignettes, participant-developed diagrams and rubrics, levels of higher order thinking achieved in participant-generated vignettes, and highlights of participants’ logs and questionnaires indicating their views on the use of vignettes as a learning activity and teaching strategy. All data was collected in the Instructional Techniques course, offered in fall 2003 at Duquesne University to graduate level students in the Education Department. All course components considered in this study directly related to the research questions. “Finding relevant materials is the first step” when considering what documents to use in qualitative research (Merriam, 1998, p. 120).

The aforementioned collection of student work was considered to be a set of artifacts worthy of analysis. “In addition to what they say and how they behave, human beings make and use things. The artifacts that result from this activity constitute data that indicate people’s sensations, experiences, and knowledge, and that connote opinions, values, and feelings” (Goetze & LeCompte, 1984, p. 153). Savenye & Robinson (1996, p. 1184) explain:

The artifacts of interest to educational technologists are often written, but computer trails of behavior are becoming the objects of analysis as well.

Examples of artifacts that may help to illuminate research questions include textbooks and other instructional materials, such as media

materials; memos, letter, and now, e-mail records as well as logs of meetings and activities; demographic information, such as enrollment, attendance, and detailed information about subjects; and personal logs kept by subjects.

There are several examples of studies that focus on student artifact analysis and/or the use of performance assessments (e.g., Wiggins, 1998; Slifkin, 2000; Wojnar, 2000; Sri Ananda, 2000; Airasian, 2001; Brookhart, 2004). Performance assessments that focus upon meaningful and authentic tasks are useful when determining what students have learned and can apply to new situations (Wiggins, 1998; Oosterhof, 1999; Brookhart, 2004). In this study, the participants' responses to teacher-generated vignettes and learner-generated diagrams, rubrics, and vignettes are considered performance assessments.

At the conclusion of the course, three readers were trained to score vignette assignments and rate discussions. The group moderation process, where examples of work are discussed by groups of teachers or lecturers, was intended to arrive at a shared understanding of the criteria in operation so that both the processes and the products of assessment were considered (Gipps, 1994). The readers were instructed how to make structured observations according to a set of guidelines provided by Goetz and LeCompte (1994).

The readers used scoring guides and rubrics to record observed achievements and higher order thinking in participant work. "Two fundamental components of observational research include the use of predefined, behavior-code catalogs and reliable observers" (Knutfer & McLellan, 1996, p. 1202). How the readers were trained to code

observational data into categories so that quantitative relationships could be analyzed is explained later in this chapter. The researcher also examined student logs and questionnaire responses using the Constant Comparative Method (Glaser & Strauss, 1967) by coding incidents from the data into categories and then performing the analysis.

### Pilot Studies

Two pilot studies were held during the spring and summer semesters of 2003. The studies were conducted to determine the reliability of the background and course-ending questionnaires and scoring guides and rubrics. The pilot study data were also analyzed as evidence of the scoring guides and rubrics as valid measures of course content mastery, levels of Taxonomy of Educational Objectives attained, and vignette preference.

#### First Pilot Study – Spring, 2003

The first pilot study was conducted during the 15-week spring semester of 2003 with seven participants in a section of the Instructional Techniques course. The seven students, five females and two males, attended scheduled sessions and worked online between session meetings. All seven consented to be participants in the study. Four wanted to learn about teaching and training techniques and three wanted to learn about teaching and training techniques and classroom/workshop management. Six participants were completing their first master's degree and one was completing a second. One had no teaching experience, four had 1-3 years teaching experience, one had 4-9 years teaching experience, and one had more than 20. The subjects that the participants were teaching at the time were corporate nutrition, business management and selling, science, English, computers, religion, mathematics, history/social studies, and reading. Two participants

were elementary school teachers, three were high school teachers, one taught at both levels, and one trained in the corporate environment.

Five of the seven participants had previously used stories or case studies in their teaching or training experiences. Six had previously participated in asynchronous and synchronous discussions, two in correspondence courses, and none in videoconferences. When asked about web-based course management environments, four participants reported previous experience with Blackboard, six with WebCT, and one with FirstClass.

When estimating the percentage of online vs. face-to-face learning, one participant reported learning completely online, two reported 10% online and 90% face-to-face; two reported 50% online and 50% face-to-face, one reported 40% online and 60% face-to-face, and one reported that when the course is online, then 100% of the learning time is spent online. When evaluating prior online educational experiences, one participant rated the online course better than a face-to-face course, four rated them about the same, and two rated the online course not as good as a face-to-face course.

The Instructional Techniques course was conducted as a hybrid course. During the first session (face-to-face), the researcher (course instructor) introduced class members to each other, oriented the participants to the online course environment, provided the list of required books, administered the background questionnaire, administered the diagnostic pretest, administered the K-W-L chart, and presented course material from the first textbook. The diagnostic pretest was administered to determine participants' prior knowledge concerning course topics in order to measure academic achievement during the course. Four of the class meetings were face-to-face: the first two, one mid semester, and one at the end of the course.

The researcher assessed the participants on how well they completed and created vignettes, but she also allowed them to choose other assessments and activities: completing and presenting a K-W-L chart, developing and presenting two lessons that demonstrate instructional techniques discussed during the course, developing a rubric or diagram that assists in assessing participants' students for a particular lesson, and constructing or adding materials to a portfolio. Participants participated both asynchronously (participants completed vignettes and responded to discussion questions) and synchronously (completing and creating vignettes in small groups). Guidelines for communication via asynchronous discussions and synchronous chats were provided in advance.

The scoring guide for participant-generated vignettes was based upon the writing standards rubric for Pennsylvania and the researcher's understanding of how Maeder (April 18, 2002) graded vignettes in his online classes. When developing vignettes, participants worked in groups; therefore, a section on how participants participated in groups online was included, and was only used for the synchronous discussions. A table developed by Wojnar (2000) was used to determine how well participants were achieving higher levels of Taxonomy of Educational Objectives (analysis, application, synthesis, and evaluation), as well as transfer of learning when creating vignettes. Participants completed a questionnaire to determine whether or not participants preferred vignettes to other forms of teaching strategies and learning activities.

Three changes to the present study were instituted as a result of this pilot study. The consideration of group work via synchronous discussions was dropped, in order to focus on individual participant work. Second, the learning log activity was added in order

to allow participants to reflect on their experiences with vignettes. This study's research questions were changed accordingly. Scoring guides for the diagram and vignette assignments and learning logs were modified and added to the instruments. Finally, due to the low enrollment in the course considered for the pilot study and the projected number of participants for the actual study, the type of study was changed from a quasi-experimental study to a case study. As a result, the New Jersey Reasoning Skills Tests, originally considered as a covariate in the quasi-experimental study, was omitted. Midterm and final exams were replaced by vignette responses, diagrams, and rubrics.

#### Second Pilot Study – Summer, 2003

The second pilot study was conducted during the 5-week summer semester of 2003 with six participants in a section of the Instructional Techniques course. The six students, four females and two males, attended scheduled sessions and worked online between session meetings. All six consented to be participants in the study. Two participants wanted to learn about teaching and training techniques, two wanted to learn about classroom/workshop management, one wanted to learn about both, and one wanted to learn about teaching and training techniques and theory and assessment. All six participants were completing their first master's degree. Two participants had no teaching experience, one had three years teaching experience, and three had 4-9 years teaching experience. Subjects taught were science, English, computers, mathematics, and history/social studies. Three participants were elementary school teachers, one taught at the university level, one planned to teach elementary school, and one planned to teach at the secondary level.



Five of the six participants had previously used stories or case studies in their teaching or training experiences. Four of the six had previously participated in asynchronous discussions, four in synchronous discussions, four in correspondence courses, and one in videoconferences. When asked about web-based course management environments, four participants reported previous experience with Blackboard, three with WebCT, and none with FirstClass.

When estimating the percentage of online vs. face-to-face learning, one participant reported learning completely online, one reported 90% online and 10% face-to-face; two reported 50% online and 50% face-to-face, one reported 30% online and 70% face-to-face, and one reported 10% online and 90% face-to-face. When evaluating prior online educational experiences, one participant rated the online course better than a face-to-face course, four rated them about the same, and one preferred a “hybrid class where both can be done.”

The Instructional Techniques course was conducted as a hybrid course in essentially the same manner as in the first pilot study. The number of face-to-face sessions and the number and type of assessments were identical. Three changes to the present study were instituted as a result of this pilot study: 1) minor word changes to the research questions, diagnostic pretest, questionnaire, and scoring guides; 2) a decision to post participant vignette responses online for all to read and rate only after all participants had completed the assignment; and 3) rubrics to accompany the scoring guides for the diagram and vignette assignments were modified and added to the instruments.

## Participants

This study was conducted during the 15-week fall semester of 2003 with eight participants in a section of the Instructional Techniques course, GITED 631, offered through the School of Education at Duquesne University. The eight students, five females and three males, attended scheduled sessions and worked online between session meetings. All eight consented to be participants in the study. Five wanted to learn about teaching and training techniques and three wanted to learn about teaching and training techniques as well as classroom/workshop management. All eight were completing their first master's degree and one was completing a second. One had no teaching experience, four had 1-3 years teaching experience, two had 4-9 years teaching experience, and one had more than 20. The subjects that the participants were teaching at the time were science, English, computers, religion, mathematics, history/social studies, reading, TV production and video, special education, library, and multimedia. Six participants were elementary school teachers and two taught at the university level.

Seven of the eight participants had previously used stories or case studies in their teaching or training experiences. Seven participants had previously participated in an online course where seven also previously participated in asynchronous discussions, five in synchronous discussions, three in correspondence courses, and four in videoconferences. When asked about web-based course management environments, six participants reported previous experience with Blackboard and six with WebCT.

When estimating the percentage of online vs. face-to-face learning, four reported 50% online and 50% face-to-face, one reported 40% online and 60% face-to-face, and two reported 10% online and 90% face-to-face. When evaluating prior online educational

experiences, one participant rated the online courses taken as both better than a face-to-face course and about the same, five rated them about the same, and one rated the online course not as good as a face-to-face course.

This study used criterion sampling, a type of purposive sampling (Gay & Airasian, 2000; Merriam, 1988), by “selecting all cases that meet some criterion or have some characteristic” (Gay & Airasian, 2000, 139). Sharan Merriam points out that the most common form of sampling in qualitative studies is purposive and that purposive sampling is based on selecting participants from whom the researcher can learn the most (Merriam, 1988, p. 48). Because vignettes were considered as both a teaching strategy and learning activity, the researcher selected a participant population with an interest in teaching or training.

#### Instructional Considerations

This section details how the instructor addressed the research questions during the study as they pertained to the Generative Learning Model and the use of vignettes in a hybrid course. “To ensure consistency of approach, therefore, we need to ensure that teachers understand fully the constructs which they are assessing (and therefore what sort of tasks to set); how to get at the pupil’s knowledge and understanding (and therefore what sort of questions to ask); and how to elicit the pupil’s best performance (the physical, social and intellectual context in which the assessment takes place)” (Gipps, 1994b, p. 14).

#### Enhancing Academic Achievement with Vignettes

The first research question concerned the Generative Learning Model and academic achievement as measured by course assignments. This section describes how

the instructor addressed each of the model's components, (attention, motivation, prior knowledge, generation, and metacognition), and how academic achievement was measured by the participants' assignments: responding to teacher-generated vignettes and creating their own vignettes, diagrams, scoring guides, and rubrics.

### Addressing Attention

Following the Generative Learning Model, the instructor focused participant attention on the vignettes by basing them on background questionnaire data and textbook information. The instructor addressed participants' prior knowledge by having them complete a diagnostic pretest, fill in a K-W-L chart, and discuss previous experiences with instructional techniques. The instructor's online presentations summarized main textbook concepts of the book, which were also a part of the classroom discussions. The instructor reviewed all scoring guides and rubrics using handouts and online presentations in order to make sure the participants understood how to respond to vignette and diagram assignments. The instructor also highlighted the components of the Generative Learning Model and how they would be addressed during the class.

### Addressing Motivation

To address motivation, the instructor spent parts of two face-to-face sessions linking specific topics in the course syllabus that matched participants' backgrounds and areas of academic interest. The K-W-L chart, indicating what participants knew and wanted to know, was used also to assure the participants how the course would address their professional needs. Similarly, the diagram assignment was noted as a way for participants to learn about different ways of presenting material to their students. Finally,

the rubric assignment was indicated as a way to help participants design their own assessment tools.

#### Addressing Prior Knowledge

The participants were encouraged to incorporate their prior knowledge and current teaching experiences when completing vignettes and creating diagrams. Since several participants had not previously used rubrics to grade performance assessments, the instructor assisted the participants in determining assessment criteria and different levels of achievement. To promote online discussions, the instructor posted participants' vignette responses and required each participant to rate two of their classmates' responses according to how helpful or informative they were with respect to the course topic. The instructor provided individual feedback on all participant coursework via e-mail correspondence.

#### Addressing Generation

The vignette assignments required several types of generation activities: constructing main ideas, writing summaries, solving problems, providing definitions, examples, and explanations. That is, it was essential that participants solved the problem in the vignette by providing examples of techniques that would work within the vignette. They also had to perform the same types of generation activities when designing the diagrams and rubrics. To create a diagram, participants needed to decide what they wanted to teach using a diagram, refer to a number of diagrams already created and published in the course text, select and modify an appropriate diagram for the lesson, provide directions for the diagram, and provide a follow-up activity. To create a rubric, participants were required to decide on a task or skill they wanted their students to

master, include at least three different descriptors or statements describing the different levels of achievement, include three to six clearly-defined criteria, including indicators of the criteria to be met, and indicate a scale of points to be assigned.

### Addressing Metacognition

To address metacognition, the instructor required participants to reflect upon and respond to questions in a learning log concerning their learning experiences when completing the vignette assignments. The questions asked how the participants felt about creating their own vignettes in class, how they felt about someday creating vignettes for their own students, and what they thought about having their own students create vignettes. As part of the diagram assignment, the participants were required to explain the objectives they intended the diagram to address, how the diagram would be used, including subject and student age, how the participant's students would complete the diagram, and how the participant would assess his or her own students.

### Setting up the Asynchronous Discussions

The course instructor posted the vignettes online so that the participants could refer back to them at any time. Each set of teacher-generated vignettes was posted in two different asynchronous discussion forums, in which each individual teacher-generated vignette had its own threaded discussion. This was done so that it was easier for participants to refer to one teacher-generated vignette and then read through the responses that pertained to that vignette.

The course instructor required participants to send their responses privately to the instructor so that their ideas would not be used by other participants. After the course instructor received all of the vignettes, she posted them to the appropriate places within

the asynchronous discussion forums so that the other participants could read through and respond to at least two of them. The instructor required the participants to rate all of these responses on a scale from 1 to 6 (1 lowest, 6 highest) and then send these ratings to her via e-mail (so that none of the participants would be embarrassed). The instructor also required participants to respond to at least two of these postings. Both tasks were completed within a week after the instructor posted the vignettes to the asynchronous discussion. The instructor responded to everyone within the asynchronous discussion environment; however, scores calculated for the vignette responses were sent individually to the participants via e-mail to maintain privacy.

### Promoting Higher Order Thinking with Vignettes

The second research question concerned the Generative Learning Model and higher order thinking as measured by learner-generated vignettes in asynchronous discussions. This section describes how the instructor addressed each of the model's components and how higher order thinking was measured by the vignettes participants created.

### Addressing Attention

The instructor focused participant attention on the vignette creation process by reviewing the course objectives and the teacher-generated vignettes they had previously completed. The instructor's online presentations provided general definitions of vignettes, types and examples of vignettes, a description of how the instructor created them, and how they have been used with adult learners.

### Addressing Motivation

To address motivation, the instructor reviewed previous vignette class work and encouraged participants to create and use their own vignettes in their own teaching.

Graves (1975) found that when he allowed students in primary grades to write on what they were interested in that the amount written was significantly increased (Scardamalia & Bereiter, 1996, p. 786).

### Addressing Prior Knowledge

The instructor made no assumptions about the participants' creative ability or past writing experiences and therefore reviewed the components of a story: characters, setting, plot, and some type of problem or challenge. The instructor reminded the participants to relate the process of creating the vignettes to their own understanding and background.

The instructor also modeled the vignette-creation process through the think-aloud technique so that participants were able to be a part of the process as well.

### Addressing Generation

The vignette-creation assignment is an important generation activity: linking prior knowledge to the subject matter. To do this, the instructor had participants complete a "vignette starter," a type of advanced organizer, before writing their vignette. The "vignette starter" provided participants cues to generate their own vignettes. This organizer provided instruction to participants to "web out" their ideas first, and then to answer a series of questions, which were based on the thought processes the instructor went through, the definition of what a vignette is, and the elements of the vignette the participants had to consider. It also reminded participants to review the vignette a few times and edit it, where necessary, so that all the requirements of the assignment specified



in the scoring guide and rubric were met. The instructor worked with each participant individually in class to be sure each participant had a preliminary idea and understood the process. “Experts and novices alike generate content partly by heuristic search, guided by knowledge of what they are looking for, and partly by associative processes that bring content spontaneously to mind. Good writing undoubtedly requires both” (Scardamalia & Bereiter, 1996, p. 787). The instructor reviewed the scoring guide and noted the importance of reviewing the rubric online to make sure they had included everything and to understand how they would be graded.

#### Addressing Metacognition

To address metacognition, the instructor required participants to explain how they wrote their vignettes and reflect in their learning logs about using vignettes as a teaching strategy or learning activity.

#### Evidence of Higher Order Thinking

Writing vignettes requires higher order thinking. Higher order thinking, according to the Taxonomy of Educational Objectives, includes analysis, application, synthesis, and evaluation. It seemed reasonable that participants would demonstrate higher order thinking by transferring their vignette-completion experiences to writing their own vignettes (application); by selecting objectives to be met, by considering their students’ background when creating a vignette (analysis); and by including in the vignette a context, problem, and potential solutions for their students to evaluate (synthesis).

#### Setting up the Asynchronous Discussions

Three separate asynchronous discussion forums were set up for each set of vignettes participants created. Participants were not required to post responses to the

other vignettes; however, the instructor believed that it might be helpful for participants to read each others vignettes.

#### Other Considerations for the Hybrid Online Learning Environment

The instructor set up the first two classes of the course as face-to-face meetings so that the participants would be able to meet each other and the instructor before working online. The following paragraphs explain how the instructor met adult learner needs and goals such as motivation, comparing past experiences with new experiences, sharing experiences, feedback, practical learning, and control (Stilborne & Williams, 1996).

To motivate participants at the first face-to-face class meeting, the instructor set aside class time for introductions so that participants could share about their background and what they wanted to get out of the course. The instructor reviewed the course syllabus and addressed how each participant's goals would be met at a result of taking the course. The discussions and vignette activities linked to course content and participant background were two ways the instructor linked previous learning experiences to new ones. Since not all participants were experienced with distance learning or the course management system, part of the first class included a mini-training session, during which participants logged on to Blackboard, surveyed the online course environment, posted and responded to messages in the asynchronous discussion, and posted information to the digital drop box, where the instructor electronically retrieved the assignments.

To encourage interaction, participants were required to post responses to their classmates online, e-mail comments on the lessons, and post vignettes they created that they would find useful for their teaching or presentations. To ensure that participants were getting feedback throughout the course, the instructor posted encouraging but

informative comments within the asynchronous discussions, providing course grade information and constructive criticism.

The instructor emphasized to the participants that the course content and activities involved practical learning that they could immediately use in their own teaching. For example, participants developed lesson plans that were critiqued by classmates. Participants also reflected in their learning logs about the useful aspects of the reading material and how they would apply them to their own teaching. The course's practical learning projects, (e.g., developing diagrams and rubrics), were also valuable for later application.

Participants were given some flexibility in the way they completed course assignments. They created diagrams, rubrics, lesson plans, and vignettes in their own teaching subject of interest. Although there were guidelines for creating vignettes, some of the participants approached the task more creatively, which was encouraged as long as the basic guidelines and the application of the definition of vignettes were followed.

#### Determining Participants' Preferences

The third research question focused on participants' preferences concerning vignettes as a learning activity and whether they would use vignettes in their own teaching. Vignette completion and vignette creation have both been categorized as generative learning activities in the literature review, e.g., the Generative Learning Model has been described as both a teaching and learning model (Maeder, 1995, p. 2). This research question is therefore especially appropriate with this study's population: teachers in training. To address this question, participants were required to document their experiences with vignettes in their learning logs. Participants were asked 1) what they

thought of the use of vignettes as a learning activity when they had to complete the vignettes, 2) what they thought of the use of vignettes as a learning activity when they had to create their own vignettes, 3) what they thought of the use of vignettes as a teaching activity when considering whether they would use vignettes in their own class for students to complete, and 4) that they thought of the use of vignettes as a teaching activity when considering whether they would use vignettes in their own class for students to create.

Participants also were asked to rank the following teaching strategies and learning activities on a scale from 1 to 10 (10 = most preferred): lectures, online slide presentations, teacher modeling of instructional techniques, student-completion of teacher-generated vignettes, online discussions, student demonstrations of instructional techniques, diagrams, rubrics, learner-generated vignettes, and reflective learning logs. The participants were asked to rank each one twice: first, as a learning activity they would experience themselves and second, as a teaching strategy they would consider when teaching in their own classrooms.

### Procedure

This section documents how the researcher obtained permission from the participants, collected and evaluated student artifacts, and selected and trained the readers. At the end of the course, the researcher obtained permission from the students via a permission form. The researcher, who is also the instructor, collected required assignments and student logs throughout the duration of the course. The questionnaires, which included comments concerning the course and were not anonymous, were collected by a student and mailed to the instructor, so that student grades would not be

adversely affected by questionnaire responses. The instructor evaluated all student work during the course according to the scoring guides and rubrics.

The researcher considered readers who were familiar with scoring guides, rubrics, and Taxonomy of Educational Objectives and selected three from the ILEAD 2 cohort at Duquesne University. Each reader had experience working with adult learners. A reader training program was developed according to the following perspective provided by Knupfer & McLellan, 1996, p. 1202:

The process of observation is rigidly controlled, and the nature of the data gathered is well defined so that data quality can be assessed by interobserver comparisons, and quantitative data analysis can be employed. The analysis of structured, observational data may examine frequency, duration, and interrelationships between events in an attempt to identify meaningful patterns that are reported with descriptive statistics.

The researcher reviewed the scoring guides and scoring rubrics with the readers, emphasizing the important terms in each scoring guide. “The first step in the training is to discuss the observation form with the observers, describing each item sufficiently to develop a thorough understanding of what is to be observed and how it is to be recorded” (Borg & Gall, 1989, p. 487).

Observer training should begin with a thorough understanding of what it is to be observed and how it is to be recorded, including the observation categories and their definitions, as well as the form that data gathering will take (paper and pencil, recording device, etc). The observer trainees should become very familiar with the observation coding form and

behavior definitions before moving to the next level of training (Knupfer & McLellan, 1996, p. 1206).

Before the training process, the researcher made sure that there were examples of work to evaluate. “A pre-requisite to this process, of course, is a common marking scheme or a shared understanding of assessment criteria. The provision of exemplars, samples of marked or graded work, is sometimes a part of this process and, whilst not doing away with the need to have discussions about levels of performance, does aid teachers in getting an understanding of the overall standards” (Gipps, 1994b, p. 13). The researcher provided samples of work already evaluated using the scoring guides and rubrics. The readers then practiced evaluating student work on their own. “The next step is to set up practice observations in which all observer trainees participate” (Borg & Gall, 1989, p. 488).

The researcher considered several observer effects and errors that might affect reader performance: halo effect, (“observer’s initial impressions distort later judgments”), observer drift, (“the tendency for observers to gradually redefine the observational variables, so that the data collected later do not reflect the original categories”), error of leniency, (most of observer ratings are around the favorable end of the scale), and error of central tendency, (most of observer ratings are around the midpoint) (Borg & Gall, 1989, pp. 496-497). Following Knupfer and McLellan’s (1996) recommendations to counteract these effects and errors, the readers were instructed to score one component at a time for the entire set of responses, (e.g., if the students answered all parts of a vignette question, if the answers were logical, if the student included accurate definitions and appropriate examples, and if the student wrote a response that was appropriate for the course). The

readers were not able to see students' names when grading student work. The scoring guides included acceptable responses for the teacher-generated vignette assignments and included a written explanation of each criteria specified in the rubric.

The three readers first evaluated each student response independently. They then compared scores for each student. In cases of score differences, one reader, designated as the recorder, decided on the final score. The recorder recorded the final score in the appropriate scoring guide and indicate with an asterisk (\*) any items with score differences.

The researcher sufficiently addressed other possible training and scoring problems discussed by Knupfer and McLellan (1996, p. 1202):

Insufficient training of observers, use of a complex observation form that requires too much from the observer or requires observers to make excessively precise discriminations among behaviors, failure to take adequate precautions to avoid having observers disturb or change the situation they are to observe, failure to use at least two observers in order to determine inter-rater reliability, failure to ensure that observers work independently of each other, contamination of data collection, failure to use random sampling techniques when appropriate, and lack of tight controls that help prevent observer drift and reliability decay.

It seemed reasonable to assume that the readers understood how to use the scoring guides and rubrics so that the observational variables would be evaluated accurately.

## Instrumentation

This section provides a description and explanation of this study's instrument and explains how triangulation was incorporated to address reliability, internal validity, external validity, and construct validity, four important issues in a case study (Merriam, 1988; Yin, 1993). Knupfer and McLellan (1996, pp. 1209-1210) provide the following insight:

Good descriptive studies use data collection instruments that are reliable and valid. *Reliability* refers to the ability to provide consistent answers in comparable situations, and *validity* refers to the ability to provide answers that correspond to what they are intended to measure. One way of maintaining reliability is to make sure that the same research instrument is used for all participants within a particular study and that the research staff is well trained for using the same procedure for collecting the data (Borg & Gall, 1989; Converse, 1987; Fowler, 1993). It is also important to attend to the clarity of materials used within the study so that the respondents are able to understand precisely what is meant by any question.

### Reliability and Validity Definitions

Merriam (1988) describes reliability as “the extent to which one's findings can be replicated” (p. 170). Suggestions to ensure that the researcher's findings are dependable include having the investigator “explain the assumptions and theory behind the study, his or her position vis-à-vis the group being studied, the basis for selecting informants and a description of them, and the social context from which data were collected” (Merriam, 1988, p. 172); triangulation in using multiple methods of data collection and analysis; and



having an audit trail, which would have the investigator “describe in detail how data were collected, how categories were derived, and how decisions were made throughout the inquiry” (Merriam, 1988, p. 172).

Internal validity considers “how one’s findings match reality” (Merriam, 1988, p. 166). Merriam (1988) suggests the following strategies to collect evidence of internal validity: triangulation, member checks (“taking data and interpretations back to the people from whom they were derived and asking them if the results are plausible”), long-term observation at the research site or repeated observations of the same phenomenon, peer examination (“asking colleagues to comment on the findings as they emerge”), participatory modes of research (“involving participants in all phases of research”), and observing the researcher’s biases by “clarifying the researcher’s assumptions, worldview, and theoretical orientation at the outset of the study” (pp. 169-170).

External validity considers “how generalizable the results are of a research study” (Merriam, 1988, p. 173). Merriam (1988) suggests the following ways to improve the generalizability of the findings: providing a rich description, “establishing the typicality or modal category of the case (or describing how typical the program, event, or individual is compared with others in the same class, so that users can make comparisons with their own situations),” and “conducting a cross-site or cross-case analysis” (Merriam, 1988, p. 177).

There are three types of validity: content validity, criterion validity, and construct validity. Content validity is described as the “degree to which a test measures an intended content area” (Gay & Airasian, 2000, p. 163). This requires both item validity and sampling validity. “Item validity is concerned with whether the test items are relevant to

measurement of the intended content area and sampling validity is concerned with how well the test samples the total content area being tested” (Gay & Airasian, 2000, 163). This study’s diagnostic pretest, a type of achievement test, is an example of evidence of content validity.

Criterion validity has two forms: concurrent, “the degree to which scores on one test correlate to scores on another test when both tests are administered in the same time frame” (Gay & Airasian, 2000, 164), and predictive, “the degree to which a test can predict how well individuals will do in a future situation” (Gay & Airasian, 2000, 165).

Construct validity concerns what the test is actually measuring. It is considered the most important form of validity (Gay & Airasian, 2000). Yin (1993) suggests that construct validity “deals with the use of instruments and measures that accurately operationalize the constructs of interest in a study” (p. 39). One strategy is to collect evidence of the same construct from multiple sources. “Validity is the most important characteristics a test or measuring instrument can possess. It is concerned with the appropriateness of the interpretations made from test scores” (Gay & Airasian, 2000, 161). The next paragraphs describe the purpose of each instrument, how each instrument was developed, and how each instrument addressed validity or reliability.

### Background Questionnaire

The purpose of the background questionnaire (Appendix A) was to gather information on each participant’s gender, whether they wanted to focus on classroom/workshop management or learn more about teaching/training techniques, the degree the students were pursuing, teaching experience, subjects taught, teaching level, and whether they ever used stories or case studies in their teaching. The questionnaire

also addressed prior online learning experience, asynchronous and synchronous discussion formats, course managements systems, the ratio of online learning to classroom learning, and overall preference between online and face-to-face learning. In an effort to address construct validity, the questionnaire was reviewed beforehand by Wojnar (2000), considered an expert in teaching online courses.

#### Diagnostic Pretest

The purpose of the diagnostic pretest (Appendix B) was to measure how much of the course content participants knew prior to the course. The pretest was also administered at the end of the course, as a way of measuring how much of the course content participants mastered during the course. The pretest consisted of five questions – each one addressing the five main sections of the course. Construct and content validity were partially addressed by the pretest’s essay format, which allowed for more detailed descriptions, explanations, and analyses.

#### K-W-L Chart

The K-W-L Chart (Appendix C), a type of advanced organizer used by educators and researchers (Tucke-Czajkowski, 2000; Wojnar, 2000), was included to separate what the participants knew, what they wanted to know, and what they ultimately learned. The participants completed the first two columns (K and W) at the beginning of the course and completed the third column (L) at the end of the course. The K-W-L chart provided a cognitive bridge to achievement by preparing participants for upcoming content and by requiring participants reflect on what they had already learned. Construct and content validity were partially addressed by the K-W-L chart.

### Teacher-Generated Vignettes

The teacher-generated vignettes (Appendix D) used in this course were based on the background questionnaires completed by the participants, discussions held in face-to-face meetings that addressed each participant's set of professional and personal goals, and course material. The course material considered for the two vignettes was taken from the following two books: *Methods that Matter: Six Structures for Best Practice Classrooms* (Daniels & Bizar, 1998) and *Professional Portfolios for Teachers* (Tomei & Wilcox, 2000). Considering the fact that the instructor had written two sets of vignettes during the two pilot studies, the process of writing vignettes for the participants represented some evidence of construct and content validity.

### Participant-Completed Vignette Scoring Guide

The Scoring Guide for Evaluating Participant-Completed Vignettes that are Teacher-Generated (in Asynchronous Discussions) (Appendix E) was initially based on the Pennsylvania writing rubric, how Maeder (April 18, 2002) graded vignette responses in his online courses and on Maeder's comments regarding the scoring guide (July 31, 2003). In an effort to address content validity, criterion validity, and construct validity, the scoring guide was modified following the results of pilot study data and comments from Maeder and other committee members to include five categories: valid response, analysis, defense, discussion, and language.

### Participant-Developed Diagram Scoring Guide

The Scoring Guide for Evaluating Participant-Developed Diagrams (Appendix F) was developed to evaluate how participants applied one of the diagrams from the *Up and Out* (Johnson, 2000) text to one of their own lessons. In an effort to address content

validity, criterion validity, and construct validity, the scoring guide was modified following the results of pilot study data and comments from Wojnar and other committee members to include the name of the diagram, how accurate the representation was made, how clear the directions were for the participant's students, whether a follow-up activity was provided for the participant's students, and a write-up that explained the diagram's purpose, objectives, how it would be used (subject and age of participant's students), how the students would complete the diagram and how the participant would assess the students.

#### Participant-Developed Rubric Scoring Guide

The Scoring Guide for Evaluating Participant-Developed Rubrics (Appendix G) was developed to evaluate how well participants created a rubric following the format in the *Up and Out* text. In an effort to address content validity, criterion validity, and construct validity, the scoring guide was modified following the results of pilot study data and comments from Wojnar and other committee members to include whether the descriptors clearly described each level of performance, whether the participant included three to six clearly written criteria related to the task, whether the indicators (specific concrete examples) were included, and whether the participant included the scale of points to be assigned for each possible level of performance.

#### Evaluating Levels of Cognitive Activity

The first of two instruments used to determine frequency of higher order thinking when writing vignettes was Evaluating Bloom's Levels of Cognitive Activity in Student Work (Appendix H), derived from Wojnar's (2000) study. This table illustrated how student work can exhibit various levels of higher order thinking. The second instrument,

### Evaluating Higher Order Thinking in Participant-Generated Vignettes (An Example)

(Appendix I) outlined how participants could exhibit higher order thinking when writing vignettes. In an effort to address content validity, criterion validity, and construct validity, each table included the levels of higher order thinking from Taxonomy of Educational Objectives, (application, analysis, synthesis, and evaluation), and the characteristics of each level in participant work.

#### Participant-Generated Vignette Scoring Guide

The Scoring Guide for Participant-Generated Vignettes (Appendix J) was initially based on how Maeder (April 18, 2002) graded vignette responses in his online courses and on the comments Maeder provided to the researcher (July 21, 2003; July 28, 2003). In an effort to address content validity, criterion validity, and construct validity, the scoring guide was modified following the results of pilot study data and comments from committee members to include the context of the vignette, its story elements, the content of the vignette, the language used, and the participant's explanation of the vignette.

#### Rubrics

The Rubric for Participant-Completed Vignettes that are Teacher-Generated (in Asynchronous Discussion) (Appendix K), the Rubric for Evaluating Participant-Developed Diagrams (Appendix L), the Rubric for Evaluating Participant-Developed Rubrics (Appendix M), and the Rubric for Participant-Generated Vignettes (Appendix N) were all developed to explain in more detail how participant work should be evaluated. Each rubric is based on its corresponding scoring guide and was reviewed for content validity, criterion validity, and construct validity by the committee members.

### Learning Logs

Five learning logs activities were included in the study so that participants would reflect on the four course texts and their experiences using vignettes in the course.

Directions for the learning logs are included in Appendix O. In the fifth learning log, participants were asked to comment on the use of vignettes as a learning activity, what they thought about vignettes when creating their own, what they thought about giving their own students vignettes to complete, and what they thought about having their own students create vignettes. In an effort to address content validity, criterion validity, and construct validity, the learning logs were used to collect participants' opinions concerning the use of vignettes in the classroom.

### Preference Questionnaire

The Questionnaire on Preference of Teaching Strategies and Learning Activities (Appendix P) was developed to determine how participants rated the use of teaching strategies and learning activities in the Instructional Techniques course, how participants ranked them in terms of how they would prefer to learn course material, and how participants ranked them in terms of how they would consider teaching course material. The questionnaire was reviewed by committee members to address content validity, criterion validity, and construct validity.

### Triangulation

“The most persuasive evidence and the strongest inference comes from a triangulation of measurement processes” (Webb, 1966, p. 34). Denzin (1978) identified four types of triangulation: 1) data triangulation – the use of a variety of data sources in a study; 2) investigator triangulation – the use of several different researchers or evaluators;

3) theory triangulation – the use of multiple perspectives to interpret a single set of data; and 4) methodology triangulation – the use of multiple methods to study a single problem or program.

Triangulation of the measurement process was accomplished when investigating each research question. Question 1 involved investigator triangulation, since three readers scored participants' vignette responses according to scoring guides, and methodology triangulation, since there were two different methods to study the question, discussion ratings and vignette scores. Question 2 involved investigator triangulation, since the readers examined vignette responses for evidence of higher order thinking. Question 3 involved methodology triangulation by using two different methods, logs and questionnaires, to study the question.

#### Data Collection

This section addresses what were considered artifacts, how the artifacts were collected, and how the readers analyzed the artifacts. "Collection and examination of artifacts in qualitative research involves four activities: locating artifacts, identifying the material, analyzing it, and evaluating it" (Goetz & LeCompte, 1984, p. 155).

The researcher determined that the artifacts most useful in addressing the research question involving academic achievement were the participants' vignette responses and created diagrams and rubrics. The most appropriate artifact for observing higher order thinking were the participant-generated vignettes. The most appropriate artifact for determining how participants viewed vignettes as a teaching strategy and learning activity were student learning logs and questionnaires. These artifacts were all collected and placed into individual folders for each participant.



The analysis of the artifact concerned “Who produced it? For whom was it made? When and where was it constructed? Under what circumstances and for what purpose was it produced?” (Goetz & LeCompte, 1984, pp. 155-156). The researcher collected this information from the participants via the background questionnaire. The evaluation of the artifact collection for selection bias, authenticity, and participant distortion or falsification was conducted through class discussions, both online and face-to-face, and careful bookkeeping.

At the conclusion of the course, the readers were given the participants’ coursework. To protect the identity of the participants, the names were deleted and replaced with numbers. To address the first research question, the readers used the rubric to complete a scoring guide for each of the vignettes the participants answered. To address the second research question, the readers used the table Evaluating Bloom’s Levels of Cognitive Activity in Student Work to determine the number of occurrences of analysis, application, synthesis, and evaluation in each learner-generated vignette. Knupfer & McLellan (1996, pp. 1203-1205) explain the following:

Once the observational variables to be used in the research study are identified, you need to develop a form on which they can be recorded. A paper-and-pencil observational form is one option that can accommodate a variety of scoring procedures. This form of scoring can be designed so as to require a minimum of effort on the part of the observer and can usually be developed so as to require the observer to make a few inferences. ...A critical component of structured observational research is the catalog of behavior codes identifying the behaviors that will be the basis for data

gathering. In fact, Bakeman and Gottman (1986) suggest that the coding scheme is the most important component of observational research. The coding catalog is the measuring instrument of observational research, specifying which behavior is to be selected from the passing stream of activity and recorded for subsequent study.

The scoring guides were tested and revised as a result of the two pilot studies. The scoring rubrics were developed to show more clearly how the data was to be scored. Wojnar's (2000) tables had already been used in a previous study. These instruments were therefore the observation forms that readers used to score the vignettes and determine the levels of Taxonomy of Educational Objectives achieved.

#### Data Analysis

This section describes how the readers' recorded scoring guides and tables were analyzed. "During initial stages of analysis ethnographers decide how to retrieve the data, what to do with it, and what it all means" (Goetze & LeCompte, 1984, p. 166). The researcher considered the importance of deciding on units of analysis, as explained by Goetz and LeCompte (1984, p. 168):

Discovering or establishing units of analysis is a major task in processing ethnographic data. Analytic units serve a dual function in the research process. First, they are perceptual divisions that guide collection of data... Second, they are the means of reducing raw data to divisions manageable for manipulation. Choosing or generating units of analysis requires formal and informal scanning and coding of preliminary data gathered during mapping phases. It is the ethnographer's first step in data analysis.

Question 1: Will the student completion of teacher-provided vignettes, as they are presented in a hybrid online course designed with the Generative Learning Model, enhance academic achievement as measured in the following types of student work/activities: asynchronous discussions, diagrams, and rubrics?

The external readers were trained to score the vignette assignments to see if their scores agreed with the academic achievement scores that the instructor assigned. The readers did not score the participants' diagrams or rubrics, because the emphasis of the study was on the use of vignettes. The researcher noted any score differences between those determined by the readers and the instructor for each subcategory and final total. The researcher also compiled descriptive statistics, (range, mean, median, frequencies, etc.), for each type of assignment including sub-categories. Scores were also sorted by each participant to note any trends in performance.

Question 2: Will the creation of learner-generated vignettes, as they are presented in the Generative Learning Model, promote higher order thinking including application, analysis, synthesis, and evaluation as measured in three different asynchronous discussions?

The external readers were trained to analyze the participants' vignettes, recording the levels of Taxonomy of Educational Objectives achieved. The final tallies of application, analysis, synthesis, and evaluation for each set of vignettes were recorded. The method for analyzing the data was enumeration, which is "a process by which previously derived or defined units of analysis are subjected to systematic counting or enumeration" (Goetz & LeCompte, 1984, pp. 5-6).

Some supplemental enumerative strategies may be used inductively, whereas others serve clearly deductive purposes. They may provide strictly descriptive material, or they may augment attempts to generate, refine, or verify hypotheses. Most are intended for an analysis of objective data, although frequency counts of subjective participant constructs are common. All require explicitly formulated analytic units so that what is countable is clearly designated. These units may be developed on site by the researcher or borrowed from others' schemes (Goetz & LeCompte, 1984, p. 186).

Question Three: Do students prefer vignettes to lectures, teacher demonstrations, student demonstrations, projects, online slide presentations or online discussions as shown in the following: student reflective learning logs and questionnaire (distributed at the end of the course).

The questionnaire asked participants to: 1) rate the Instructional Techniques course's teaching strategies and learning activities according to a Likert-type scale; 2) rank the learning activities when learning other content material; and 3) rank the teaching strategies when teaching their own students. Means and medians of the rankings were compared.

The Constant Comparative Method was used when analyzing the learning logs and written sections of the questionnaire. The method concerned "generating and plausibly suggesting (but not provisionally testing) many categories, properties, and hypotheses about general problems" (Glaser & Strauss, 1967, p. 104). The method involved four stages: 1) comparing incidents applicable to each category, i.e., coding an

incident in a category while comparing it with previous incidents in the same category; 2) integrating categories and their properties; 3) delimiting the theory; and 4) writing the theory (Glaser & Strauss, 1967, pp. 105-113).

### Summary

This study conducted qualitative and quantitative analyses of participant work and questionnaire responses to demonstrate enhancement of academic achievement, promotion of higher order thinking, and preference of using vignettes in the classroom or presentation situations. Evidence of enhancement of academic achievement was collected through participant responses to teacher-generated vignettes, participant-developed diagrams, and participant-developed rubrics. Evidence of higher order thinking, as determined by Taxonomy of Educational Objectives, was collected through learner-generated vignettes. Participants' reflective learning logs and questionnaire responses were collected to determine participants' teaching and learning preferences when using vignettes compared to other methods of teaching strategies and learning activities.

## CHAPTER 4

### PRESENTATION AND ANALYSIS OF DATA

#### Introduction

This study focused on student improvement in academic achievement and on student's ability to reach higher order thinking, via the use of vignettes as presented in the Generative Learning Model in a hybrid online course. To determine how academic achievement was enhanced, the scores of participant's responses to teacher-generated vignettes, participant-developed diagrams, and participant-developed rubrics were observed. Scoring guides and rubrics were developed to determine participant's academic achievement. To determine what levels of higher order thinking the participants achieved when writing their own vignettes, a diagram illustrating the Taxonomy of Educational Objectives and attributes of student work at each level was used. External readers were trained to analyze the responses to the teacher-generated vignettes for academic achievement and to determine which levels of higher order thinking were achieved in learner-generated vignettes. Because the focus of this study was primarily on the use of vignettes in the Generative Learning Model, the external readers did not analyze the participants' diagrams or rubrics considered for academic achievement. Finally, to determine how students considered the use of vignettes as a teaching strategy and learning activity, learning logs and questionnaires were collected from the participants and then analyzed. The background information on the study's participants, based on the background questionnaire, Appendix A, is located in Appendix R.

## Enhancing Academic Achievement

### Responses to Teacher-Generated Vignettes

The first research question focused on how academic achievement was enhanced through the use of participants' responses to teacher-generated vignettes and participants' diagrams and rubrics. The first assignment required participants to respond to two teacher-generated vignettes in two different asynchronous discussions, and to respond to two other postings within the asynchronous discussions. There were five components considered in determining the participant's final score: valid response, analysis, defense, discussion, and language.

The *valid response* component considered how well the participant addressed and answered all parts of the question. The *analysis* component considered how well the participant included appropriate contextualized resource material, (use of textbook and notes), and represented and analyzed at least three points of view (where appropriate), including a clear and focused statement of agreement or disagreement. The *defense* portion component concerned how well the participant included relevant evidence in support for each of the viewpoints, cited references that justified their answers, included accurate definitions and components of key terms for each question, provided appropriate examples of key terms and issues, and defined the problem and suggested viable resolutions (where required). The *discussion* component, not scored by the external readers, concerned how well the participant's response provided a thoughtful contribution that added to the understanding of others. Participants were required to respond to at least two other postings and rate on a scale of 1 to 6 (1 being the lowest, 6 the highest) the helpfulness of the other responses posted within the asynchronous discussion. The

instructor determined that all of the participants responded appropriately to two other postings, therefore all received full credit for that part of the discussion component. The *language* component concerned word selection, appropriate language, and phrasing for the audience and measured how well participants' writing styles underscored and enhanced their vignette responses, viz., correct spelling, accurate punctuation, and correct grammar and usage. Table 3 indicates participants' scores for the first set of responses to teacher-generated vignettes according to the instructor (I) and the external readers (ER). Even though the external readers were not required to determine the scores for the discussion section, these scores were included when calculating the total scores determined by the external readers.

Table 3

*Instructor and External Reader Scores of Participant Responses to the First Set of Teacher-Generated Vignettes*

Subject/ Criteria	Participant															
	1		2		3		4		5		6		7		8	
Instructor/ Readers	I	ER	I	ER	I	ER	I	ER	I	ER	I	ER	I	ER	I	ER
Valid	15	15	15	12	15	14	14	3	15	15	15	5	15	10	13	12
Response	15	13	11	11	9	9	4	4	15	15	11	11	15	9	11	11
Analysis																
Defense	45	38	38	36	50	48	30	24	50	50	40	36	48	31	43	33
Discussion	9.3	9.3	8.6	8.6	9.1	9.1	9.1	9.1	9.7	9.7	9	9	8.9	8.9	9.1	9.1
Language	5	5	4	4	4	3	4	1	5	5	4	2	5	3	4	2
Total	89.3	80.3	76.6	71.6	87.1	83.1	61.1	41.1	94.7	94.7	82.0	63.0	91.9	61.9	80.1	67.1

Table 4 displays the percentage score difference between instructor and external reader scores for the first set of responses to teacher-generated vignettes. Intercorrelations for the first set of participant vignette scores determined by the readers and the instructor



were significant ( $r = .80, p < .02$ ). Considering the low power of all statistical tests in this study, (since  $n = 8$ ), this finding suggests a high level of inter-rater reliability between the readers and the instructor when scoring the first set of vignette responses.

Table 4

*Percentage Score Difference Between Instructor and External Reader Scores of Participant Responses to the First Set of Teacher-Generated Vignettes*

Subject/ Criteria	Participant							
	1	2	3	4	5	6	7	8
Valid Response	0%	20%	6%	73%	0%	67%	33%	7%
Analysis	13%	0%	0%	0%	0%	0%	40%	0%
Defense	14%	4%	4%	12%	0%	8%	34%	20%
Discussion	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Language	0%	0%	0%	30%	0%	20%	20%	20%
Total	9%	5%	4%	20%	0%	19%	30%	13%

Table 5 indicates participants' scores for the second set of responses to teacher-generated vignettes according to the instructor (I) and the external readers (ER).

Table 5

*Instructor and External Reader Scores of Participants' Responses to the Second Set of Teacher-Generated Vignettes*

Subject/ Criteria	Participant															
	1		2		3		4		5		6		7		8	
Instructor/ Readers	I	ER	I	ER	I	ER	I	ER	I	ER	I	ER	I	ER	I	ER
Valid	13	14	10	15	15	15	13	3	15	15	15	15	13	14	15	15
Response	15	11	15	6	15	13	15	4	15	11	15	9	15	9	15	9
Analysis	46	48	46	36	50	46	46	12	50	50	50	33	48	44	50	48
Defense	9.3	9.3	9.4	9.4	9.6	9.6	9.6	9.6	9.5	9.5	9.3	9.3	9.6	9.6	9.4	9.4
Discussion	4	2	3	2	4	0	3	0	8	7	6	3	4	1	9	7
Language	87.3	84.3	83.4	68.4	93.6	83.6	86.6	28.6	97.5	92.5	95.3	69.3	89.6	77.6	98.4	88.4
Total																

Table 6 displays the percentage score difference between instructor and external reader scores for the second set of responses to teacher-generated vignettes.

Intercorrelations for the second set of participant vignette scores determined by the readers and the instructor were not significant ( $r = .55, p < .16$ ). The apparent lack of inter-rater reliability between the readers and the instructor was most notable in the scores of Participants 2, 4, and 6 but may also be a statistical artifact since  $n = 8$ .

Table 6

*Percentage Score Difference Between Instructor and External Reader Scores of Participant Responses to the First Set of Teacher-Generated Vignettes*

Subject/ Criteria	Participant							
	1	2	3	4	5	6	7	8
Valid Response	67%	33%	0%	67%	0%	0%	67%	0%
Analysis	27%	60%	13%	73%	27%	40%	40%	40%
Defense	4%	20%	8%	68%	0%	34%	8%	4%
Discussion	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Language	20%	10%	40%	30%	10%	30%	30%	20%
Total	4%	15%	10%	60%	5%	26%	12%	10%

Table 7 compares instructor scores between the first and second sets of participant vignette responses. Note the increase in scores from the first set of vignettes to the second set of vignettes for six of the eight participants. Table 8 compares external reader scores between the first and second sets of participant vignette responses. Note that five of the eight participants' scores increased from the first to second set. Most of the participants evidently learned how to complete the vignette task more successfully.

Table 7

*Comparison of Instructor Scores of Participants' Responses to the First and Second Sets of Teacher-Generated Vignettes*

Subject/ Criteria	Participant															
	1		2		3		4		5		6		7		8	
First Set/ Second Set	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Valid	15	13	15	10	15	15	14	13	15	15	15	15	15	13	13	15
Response Analysis	15	15	11	15	9	15	4	15	15	15	11	15	15	15	11	15
Defense	45	46	38	46	50	50	30	46	50	50	40	50	48	48	43	50
Discussion	9.3	9.3	8.6	9.4	9.1	9.6	9.1	9.6	9.7	9.5	9	9.3	8.9	9.6	9.1	9.4
Language	5	4	4	3	4	4	4	3	5	8	4	6	5	4	4	9
Total	89.3	87.3	76.6	83.4	87.1	93.6	63.0	86.6	94.7	97.5	82.0	95.3	91.9	89.6	80.1	98.4

Table 8

*Comparison of External Reader Scores of Participants' Responses to the First and Second Sets of Teacher-Generated Vignettes*

Subject/ Criteria	Participant															
	1		2		3		4		5		6		7		8	
First Set/ Second Set	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Valid	15	14	12	15	14	15	3	3	15	15	5	15	10	14	12	15
Response Analysis	13	11	11	6	10	13	4	4	15	11	11	9	9	9	11	9
Defense	38	48	36	36	48	46	24	12	50	50	36	33	31	44	33	48
Discussion	9.3	9.3	8.6	9.4	9.1	9.6	9.1	9.6	9.7	9.5	9	9.3	8.9	9.6	9.1	9.4
Language	5	2	4	2	3	0	1	0	5	7	2	3	3	1	2	7
Total	80.3	83.6	71.6	68.1	83.1	83.6	41.1	28.6	94.7	92.5	63.3	69.3	61.9	77.6	67.1	88.4

### Participant-Developed Diagrams

Participants were instructed to choose a diagram from the course text *Up and Out* (Johnson, 2000) and apply it to a lesson they planned to teach. They were asked to provide instructions to their own students on how to fill in the diagram and indicate a follow-up activity. The participants were also required to provide learning objectives for the activity, how the diagram would be used (including the subject and student age), a description of how the participant's students would complete the diagram, and how the participant would assess the students. Table 9 lists the instructor scores for participant-developed diagrams. The fact that all of the diagram scores were 93% or higher ( $M = 97.9$ ) suggests that the diagram task was successfully completed by all of the participants.

Table 9

#### *Instructor Scores of Participant-Developed Diagrams*

Subject/ Criteria	Participant							
	1	2	3	4	5	6	7	8
Name of diagram and Participant's Name	5	5	5	5	5	5	5	5
Accurate Representation	10	10	10	10	10	10	8	10
Directions for Students	10	15	15	15	15	15	15	15
Follow-Up Activity	8	10	8	10	10	10	8	10
Name of diagram	5	5	5	5	5	5	5	5
Purpose of diagram	5	5	5	5	5	5	5	5
Objectives met with diagram	10	10	10	10	10	10	10	10
How diagram was used	10	10	10	5	10	10	10	10
Description of how students will use the diagram	15	15	15	15	15	15	15	15
Assessment of student's completion of diagram	15	15	15	15	15	15	15	15
Total	93	100	98	95	100	100	96	100

### Participant-Developed Rubrics

The third part of the first research question concerned how well participants created their own rubrics. Participants were asked to choose a task they wanted their own students to complete and determine the assessment criteria they would use to grade their students. Participants were graded in six areas. They were required to identify the task at the top of the rubric and follow the rubric format provided in the *Up and Out* course text (Johnson, 2000). Participants were also required to include descriptors for each level of performance, three to six criteria related to the task, indicators of the criteria to be met at each level, and a scoring scale. Table 10 lists the instructor scores for participant-developed rubrics. Even though two rubric scores were 89, the fact that the rest of the rubric scores were 95 or higher ( $M=95.9$ ) indicates that most of the participants successfully completed the rubric task.

Table 10

#### *Instructor Scores of Participant-Developed Rubrics*

Subject/ Criteria	Participant							
	1	2	3	4	5	6	7	8
Task	5	5	4	5	5	5	4	5
Followed Provided Format	5	4	5	5	5	5	5	5
Descriptors	5	5	0	5	5	0	0	5
Criteria	20	20	20	15	20	20	20	20
Indicators	50	50	50	50	50	50	50	50
Scale of Points	15	10	10	15	15	10	10	15
Total	100	99	89	95	100	95	89	100

Table 11 compares final scores from participants' responses to teacher-generated vignettes, participant-developed diagrams, and participant-developed rubrics. Table 12 presents the intercorrelations for the following sets of scores determined by the instructor: two sets of scores for the responses to teacher-generated vignettes, and scores for the diagrams and rubrics created by the participants. None of the correlations were significant, which may be due to the small number of participants in the study but could also suggest that the three types of course assignments were not assessing a common construct of academic achievement.

Table 11

*Comparison of Final Scores from Participant Responses to Teacher-Generated Vignettes, Participant-Developed Diagrams, and Participant-Developed Rubrics*

	Participant							
Assignment	1	2	3	4	5	6	7	8
Student Response 1	94.3	80.6	93.1	61.1	99.7	83	96.9	91.1
Student Response 2	93.3	88.4	98.6	91.6	99.5	99.3	94.6	99.4
Diagram	93	100	98	98	100	98	96	100
Rubric	100	99	89	95	100	95	89	100

Table 12

*Intercorrelations for Participants' Vignette, Diagram, and Rubric Scores (n = 8)*

	Vignette Scores (First Set)	Vignette Scores (Second Set)	Diagrams	Rubrics
Vignette Scores (First Set)	–	$r = .41, (p = .31)$	$r = .09, (p = .83)$	$r = -.08, (p = .86)$
Vignette Scores (Second Set)		–	$r = .53, (p = .18)$	$r = .06, (p = .90)$
Diagrams			–	$r = .18, (p = .67)$
Rubrics				–

### Observing Higher Order Thinking with Vignettes

The second research question concerned the levels of higher order thinking participants reached when generating their own vignettes. The external readers were trained via vignette samples where higher order thinking was evident. Each reader read all of the vignettes. For each vignette, readers noted the participant number, level of higher order thinking obtained, explained why he or she believed that level was obtained, and indicated the frequency. The readers searched for higher order thinking in the writing of the vignette, its questions (tasks), and its explanation. Table 13 lists instructor-observed participant frequency of higher order thinking when writing three vignettes: application (AP), analysis (AN), synthesis (S), evaluation (E), and total (T). Table 14 lists reader-observed participant frequency of higher order thinking for the same set of vignettes.



Table 13

*Instructor-Observed Participant Frequency of Higher Order Thinking When Writing**Vignettes*

Participant/ Vignette	V1					V2					V3				
Level of Higher Order Thinking	AP	AN	S	E	T	AP	AN	S	E	T	AP	AN	S	E	T
1	2	1	1	2	6	1	1	1	2	5	1	1	1	2	5
2	2	1	1	2	6	2	1	1	2	6	2	1	1	2	6
3	2	1	1	2	6	1	1	1	2	5	1	1	1	2	5
4	0	1	1	2	4	1	0	0	1	2	1	1	1	1	4
5	2	1	1	2	6	2	1	1	2	6	2	1	1	1	5
6	1	1	1	2	5	2	1	1	2	6	1	1	1	1	4
7	0	1	0	0	1	1	1	1	2	5	1	1	1	2	5
8	1	1	1	2	5	1	1	1	2	5	1	1	1	2	5
Total	10	8	7	14	39	11	7	7	15	40	10	8	8	13	39

Table 14

*Reader-Observed Participant Frequency of Higher Order Thinking When Writing**Vignettes*

Participant/ Vignette	V1					V2					V3				
Level of Higher Order Thinking	AP	AN	S	E	T	AP	AN	S	E	T	AP	AN	S	E	T
1	2	1	1	1	5	2	1	1	1	5	2	1	1	1	5
2	2	0	1	1	4	1	1	1	0	3	2	1	1	2	6
3	2	1	1	2	6	2	1	1	1	5	2	1	1	1	5
4	0	1	1	0	2	1	1	0	0	2	1	0	0	0	1
5	2	1	1	1	5	2	1	1	0	4	2	1	1	1	5
6	1	1	1	1	4	1	0	0	0	1	2	0	1	0	3
7	1	0	1	0	2	2	0	0	1	3	1	1	1	1	4
8	2	1	1	1	5	2	3	2	2	9	2	1	2	2	7
Total	12	6	8	7	33	13	8	6	5	32	14	6	8	8	36

The intercorrelations for the higher order thinking frequency scores determined by the instructor and the readers for the first set of learner-generated vignettes were significant ( $r = .80, p < .02$ ). This finding suggests a sufficient level of reliability between the instructor and readers when determining higher order thinking frequency for the first set of learner-generated vignettes. When the same comparison was conducted on the second set of learner-generated vignettes, intercorrelations were not significant ( $r = .09, p = .83$ ). When the same comparison was conducted on the third set of learner-generated vignettes, intercorrelations were significant ( $r = .78, p < .02$ ). Taken together, these three

findings suggest some, but not complete, inter-rater reliability when determining higher order thinking frequency for the three sets of learner-generated vignettes.

It was possible that the instructor and external reader higher order thinking scores did not completely agree due to differences when scoring one or more of the four subscores: application, analysis, synthesis, and evaluation. Based on instructor ratings, the total frequency of application was 31, analysis 23, synthesis 22, and evaluation 42. Based on external reader ratings, the total frequency of application was 39, analysis 20, synthesis 22, and evaluation 20. Overall, the instructor and readers noted similar patterns of analysis and synthesis on the part of the participants across the three vignette assignments but were less similar in their observations of application and evaluation. In the case of evaluation, the fact that the instructor noted more than twice as many instances than did the readers (42 and 20, respectively) was due to the instructor's broader definition of the construct, viz., the instructor recorded instances of evaluation in the participants' vignette explanations as well as in the task questions they created whereas the readers looked for evaluation only in the participants' explanations.

Intercorrelations among the four higher order thinking subscores reported by the instructor during the first learner-generated vignette assignment were for the most part not significant. Similar patterns were observed when reviewing the second and third learner-generated vignette assignments and again when reviewing the three sets of learner-generated vignette assignments when scored by the external readers. These findings suggested that the instructor and readers were examining each participant's vignette for evidence of separate and distinct forms of higher order thinking and therefore

the lack of significant correlations among the four higher order thinking subscores was to be expected.

### Determining Participants' Preferences

#### Analysis of Questionnaires

The third research question concerned participant preferences for vignettes as a teaching strategy and learning activity over other strategies of teaching and learning activities, viz., lectures, teacher demonstrations, student demonstrations, projects, online slide presentations, and online discussions. Participant preferences were determined via their learning log reflections and course-ending questionnaire responses.

The questionnaire had a Likert-type scale, a ranking of strategies and activities (1 = lowest, 10 = highest), and a section for comments on teaching strategies and learning activities and whether vignettes allowed the participant to think or learn creatively.

Table 15 lists the mean for each of the teaching strategies and learning activities rated. Table 16 presents the ten learning activities ranked in order of participant preference. Table 17 presents the ten teaching strategies ranked in order of participant preference.

Table 15

*Means for Learning Activities and Teaching Strategies (n = 8)*

<u>Learning Activity / Teaching Strategy</u>	<u>M</u>
Student Completion of Teacher-Generated Vignettes	4.88
Online Discussions	4.63
Online Slide Presentations	4.63
Creating Learner-generated Vignettes	4.50
Teacher Modeling of Instructional Techniques	4.50
Student Demonstrations of Instructional Techniques	4.50
Diagrams	4.50
Reflective Learning Logs	4.50
Rubrics	4.38
Lectures	4.38

Table 16

*Participant Ranking of Learning Activities*

Learning Activity	Ranking
Student Completion of Teacher-Generated Vignettes	1 <sup>st</sup>
Teacher Modeling	2 <sup>nd</sup>
Creating Learner-generated Vignettes	4 <sup>th</sup> (tie)
Creating Rubrics	4 <sup>th</sup> (tie)
Online Discussions	5 <sup>th</sup>
Student Demonstrations	6 <sup>th</sup>
Constructing Diagrams	7 <sup>th</sup>
Online Presentations	8 <sup>th</sup>
Reflective Learning Logs	9 <sup>th</sup>
Lectures	10 <sup>th</sup>

Table 17

*Participant Ranking of Teaching Strategies*

Teaching Strategy	Ranking
Teacher Modeling	1 <sup>st</sup>
Students responding to Teacher-Generated Vignettes	2 <sup>nd</sup>
Constructing Rubrics	3 <sup>rd</sup>
Student Demonstrations	4 <sup>th</sup>
Constructing Diagrams	5 <sup>th</sup>
Creating Learner-generated Vignettes	6 <sup>th</sup>
Online Presentations	7 <sup>th</sup>
Online Discussions	8 <sup>th</sup>
Reflective Learning Logs	9 <sup>th</sup>
Lectures	10 <sup>th</sup>

Most notably, completing teacher-generated vignettes was ranked highest by the participants as a learning activity and second-highest as a teaching strategy. Interestingly, creating vignettes was ranked higher by the participants as a learning activity than as a teaching strategy, which suggests that although participants found the vignette writing activity meaningful, they did not find it to be potentially as effective as other teaching strategies.

Similarly, participants ranked teacher modeling high as a learning activity (2<sup>nd</sup>) and as a teaching strategy (1<sup>st</sup>), yet ranked lectures, also a teacher-driven activity, lowest in both categories. This finding is consistent with the participants' preferences for interactive tasks and strategies, viz., vignettes, rubrics, diagrams, and discussions were ranked higher than online presentations and lectures. Participant comments on the questionnaires are summarized in the next few paragraphs.

Participant 1 (P1) made positive comments concerning all of the teaching strategies and learning activities. P1 gave the highest rating (5) to all of the teaching strategies and learning activities, except for learning logs (3). Regarding vignettes as an opportunity for creativity, P1 responded:

I don't feel I am creative – I can be creative with help though. I had to think for *days* to come up with an idea for the second one. But I did it. Looking at all of them, though, I wish I would be able to think more creatively.

Participant 2 (P2) provided positive comments on all of the teaching strategies and learning activities. P2 noted that working with vignettes was one of the best aspects of the course and gave the highest rating (5) to all of the teaching strategies and learning activities, except for lectures and rubrics (both 4). Regarding vignettes as an opportunity for creativity, P2 responded:

Yes, I was able to implement my content area when developing the vignettes. I had a great experience with vignettes and I will definitely use them in my own teaching.

Participant 3 (P3) provided positive comments concerning the lectures, online slide presentations, online discussions, constructing diagrams, constructing rubrics, and

the use of reflective learning logs. P3 indicated that there was some confusion on the rubric assignment, that the rubric for the teacher-generated vignettes was confusing, and that the relationship between the scoring guide and the rubric was difficult to understand. P3 gave the highest rating (5) to all of the teaching strategies and learning activities, except for teacher modeling of techniques and constructing rubrics (both 4), and commented that the instructor should think about what to expect when giving the assignment.

Participant 4 (P4) rated all of the teaching strategies and learning activities at level 4, except for online discussions (3), and reflective learning logs (5). P4 enjoyed completing teacher-generated vignettes but felt more comfortable creating vignettes.

Participant 5 (P5) rated all of the teaching strategies and learning activities at level 4, except for online slide presentations and teacher-generated vignettes (both 5) and reflective learning logs (3). P5 noted that more instructional time for developing vignettes would have been an improvement but that the “vignette starter” was very helpful. P5 found the vignette activities very helpful and noted, “I have used stories to teach before but having guidelines to follow will make them more effective.” Regarding vignettes as an opportunity for creativity, P5 responded:

Yes – it helped me to look at teaching in a more structured way. Students learn well from examples. They like to role-play too – putting themselves in a situation helps them to learn.

Participant 6 (P6) gave the highest rating (5) to all of the teaching strategies and learning activities, except for student demonstrations (4). P6 rated the teacher-generated vignette activity as good but the learner-generated vignette activity even better. P6 also

noted that “vignettes are the best concepts” when considering teacher modeling of instructional techniques. Regarding vignettes as an opportunity for creativity, P6 responded:

Yes – I had to understand using Google to write realistic vignettes about the subject. I think that giving students the same opportunity encourages higher level thinking.

Participant 7 (P7) gave a 5 rating to teaching modeling of techniques, teacher-generated vignettes, online discussions, and reflective learning logs. P7 noted, “I enjoyed completing the vignettes, using my higher order thinking skills. I enjoyed answering the vignettes much more than generating them.” This participant gave a 4 rating to lectures, student demonstrations, and rubrics, and a 3 to online slide presentations, constructing diagrams, constructing rubrics, and learner-generated vignettes. Regarding vignettes as an opportunity for creativity, P7 responded:

It helped me think creatively because I had never done these before – so I had to think outside the box. As far as learning creatively, I am not too sure how much I learned generating them, but I liked answering them.

Participant 8 (P8) gave a 5 rating to online slide presentations, student completion of teacher-generated vignettes, online discussions, student demonstrations, constructing diagrams, constructing rubrics, creating learner-generated vignettes, and reflective learning logs, and a 4 rating to lectures and teacher modeling of instructional techniques. Regarding vignettes as an opportunity for creativity, P7 responded:



I liked creating my own vignettes. At first, I wasn't sure how to create a vignette to use with my third-grade students. I think this activity got me to think creatively and gave me the opportunity to create something I can use in my own classroom.

### Analysis of Learning Logs

The participants responded to four questions regarding the use of vignettes as a teaching strategy and learning activity. This section addresses their responses to each question.

Question 1: What did you think of the use of vignettes as a learning activity when you had to complete the vignettes?

P1 found the vignette activities helpful when reading course material and applying it to real-life situations. P2 thought the vignette activities were creative and required participants to consider different points of view and use creativity when answering questions. P3 noted, "By reading and answering various vignettes I was able to see which ones I could relate to the most, and then answer them." P3 also found it interesting and helpful to read classmates' vignette responses and consider other perspectives. P4 found the teacher-generated vignette activities useful, "because I had to think through them and extract the problems, the possible solutions, and the overall evaluation."

P5 noted being "apprehensive at first" but enjoyed completing the vignettes, learning a lot by responding to the vignettes, doing some "in-depth" thinking and reviewing the text to do more "research on certain topics." P6 observed that the teacher-generated vignette activities required participants to use higher order thinking skills by

applying their knowledge to real-life situations. P7 and P8 both found completing teacher-generated vignettes very beneficial and challenging when applying course material to new situations and finding solutions. P8 thought that classmates' vignette responses provided different thoughts, ideas, and reactions, noting, "These activities not only showed me other ways to solve these problems but also gave me new ideas for solving problems in my own classroom, through my classmates' responses."

Question 2: What did you think of the use of vignettes as a learning activity when you had to create your own vignettes?

P1 noted that determining students' background was important when designing vignettes and made the actual writing of the vignette an easier task. P2 enjoyed creating vignettes, felt very successful at it, and believed that they would be a valuable teaching tool. P3 noted that it was difficult to "focus on the end first" and determine the objective before writing the vignette. Once done though, P3 found the writing aspect relatively easy and enjoyable. P4 enjoyed the vignette creation process and eventually used two of the vignettes in the classroom. P4 found the vignette-writing activity very helpful when considering 1) the best way for students to assess competent portfolios and optimally produce their own, 2) whether a video course should be taught hands-on or theory-based, and 3) how to motivate students not interested in the subject matter.

P5 noted frequently using stories when teaching first graders and commented, "Vignettes have to be really simple in order for a first grader to understand." P5 observed that vignettes are great learning tools because they allow children to role-play and pretend. The vignette-writing activity required thinking about teaching concepts in a new way, by considering the objectives and students' background and then connecting them

together when designing the vignette. Writing vignettes helped “sort out the information and topics.” P6 preferred creating vignettes to answering teacher-generated vignettes. “The student has the real possibility of using their experiences to create situations that the instructor may not have thought of. It also promotes the idea of active-learner centered education.” P7 found creating vignettes a difficult, though intriguing task, due to problems with finding a viable scenario short enough to submit. P8 felt that creating vignettes was a very meaningful learning activity, challenging to create but ultimately beneficial. “After completing these assignments, I found them to be probably most beneficial, giving me something to use and try in my own classroom.”

Question 3: What do you think now of the use of vignettes as a teaching activity when considering whether you would use vignettes in your own class for students to complete?

Why?

P1 planned to use vignettes as a way to assess students and get them to think “on a higher level.” P2 planned to use vignettes when teaching social studies, as both an assessment tool and as a way for students to use their own creativity and past experiences to solve problems. P3 predicted that vignettes would work well in the classroom as a pretest, to determine what students already knew about a topic or a set of procedures, and as an informal assessment to “find out how much they have learned and how they would use the information in another situation.” P4 used two vignettes created in the Instructional Techniques course and found that they provided students “the opportunity to judge the content of the class as well as offer and think through the various story elements that exist,” providing solutions to different scenarios in written form.

P5 observed that the vignettes currently used were not as “structured” as the ones presented in the Instructional Techniques course but that the stories help students relate to the subject. P6 found creating vignettes to be a good alternative method to presenting material, since students answered questions by referring to source materials. P6 felt that the teacher-generated vignette is more appropriate as a presentation method than as an assessment method. P7 expressed concern that, although the students would enjoy the challenge of answering a vignette, some would not “understand the concept behind the idea and become easily frustrated.” After orally presenting one of the vignettes from the Instructional Techniques course on an overnight field trip, P7 noted:

The vignette mentioned teamwork and building relationships – the students were able to do this (successfully) while in small groups, sometimes without really thinking about it. Students that normally disliked one another worked very well together to produce an outcome. The written vignette might have been overwhelming for some students, with putting the vignette into action and apply it to their real world, made it victorious.

P8 felt that third-grade students could successfully complete vignettes, working together as a group to solve different problems, “exposed to multiple ways of solving problems and are also given an opportunity to decide the best ways for solving problems.”

Question 4: What do you think now of the use of vignettes as a teaching activity when considering whether you would use vignettes in your own class for students to create?

Why?

P1 did not yet feel prepared to have students create their own vignettes in a technology course but thought the activity very appropriate in a regular classroom. P2 felt that high school students would be more successful at creating vignettes than younger students due to greater experience and writing capability. P2 believed that the vignette-writing activity would assist students in “making a personal connection to the information” and that students would be able to retain more information. P3 did not believe that fourth- and fifth-graders would be as successful at writing vignettes as their older counterparts. P4 was not yet sure that students could create their own vignettes but noted that an online video engineering class might benefit from this approach.

P5 felt that first-graders are too young to create vignettes; although possibly more advanced students might be able to create them. P5 found writing vignettes to be a good teaching tool, because “they help you think about concepts that you have learned and then put them into story form.” P5 observed that the stories first-graders typically create are a few sentences about what they are learning and with help a story can be created from those sentences. P5 also suggested that having students act out teacher-generated vignettes would be an interesting activity. P6 felt that learner-generated vignettes were a great assessment technique to demonstrate mastery of course concepts. P6 planned to “use vignettes extensively as an instructional method and as an assessment technique.” P7 planned to have students create their own vignettes in small groups and have peers solve them, noting that students “love to write about themselves, a problem that they are

having, or something exciting.” P8 felt that third-graders would need guidance at first to create vignettes but that they would be able to come up with good vignettes based on personal experiences. P8 suggested using vignettes in conjunction with reading a story to “give students a chance to reflect on what they are reading as they create the vignette and an opportunity to problem solve how they would answer this type of situation if they were these children.”

### Summary

This study presents quantitative and qualitative analyses to analyze data considered for academic achievement, higher order thinking, and preferences for teaching strategies and learning activities. Scoring guides and rubrics were used to determine participants’ scores of responses to teacher-generated vignettes in asynchronous discussions, diagrams, and rubrics. Significant intercorrelations between instructor and external reader scores provided evidence of inter-rater reliability. In most cases, participant performance from the first to second vignette assignments increased. Participants’ high scores on the diagram and rubric assignments indicated that they completed these assignments successfully. The lack of a significant intercorrelation between diagrams, rubrics, and vignettes suggested that different constructs were being measured.

External readers and the instructor examined three vignettes written by the participants to look for evidence of higher order thinking: application, analysis, synthesis, and evaluation. Evidence of inter-rater reliability was obtained in two of the three sets of vignettes. There was a significant difference in frequency of evaluation noted by the

instructor and the readers. Nevertheless, there was ample evidence of the four levels of higher order thinking in each set of vignettes.

Responses to a questionnaire and a participant learning log determined whether participants preferred completing teacher-generated vignettes and writing their own vignettes as learning activities and teaching strategies. Based on their own experiences in the Instructional Technologies course, participants rated completing teacher-generated vignettes first, followed by writing their own vignettes, reflective learning logs, diagrams, teacher modeling of instructional techniques, and student demonstrations of instructional techniques. As a learning activity, participants ranked completing teacher-generated vignettes first, followed by teacher modeling, creating learner-generated vignettes, and creating rubrics. As a teaching strategy, participants ranked teacher modeling first, followed by completing teacher-generated vignettes. Having students generate their own vignettes was ranked sixth as a preferred teaching strategy. Overall, participants' comments were very positive regarding teacher-generated vignettes and learner-generated vignettes as learning activities and teaching strategies.

## CHAPTER 5

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Introduction

The literature review described several needs of adult learners, explained how the Generative Learning Model was used to meet some of these adult learning needs, and detailed many instances where different forms of stories, with similar characteristics to vignettes, have been used successfully with adult learners. The literature review also included instances in which the Generative Learning Model was used successfully with adult learners online. Two specific needs of adult learners, achieving higher order thinking and academic achievement, were the anticipated outcomes of this study. This study shows that as a result of using vignettes as a generative learning activity in the Generative Learning Model, vignettes may be used to promote higher order thinking and enhance academic achievement. This study also shows that the use of vignettes is preferred to other teaching strategies and learning activities.

#### Plan of Study

The purpose of this study was to: 1) determine whether student completed vignettes provided by the teacher enhance academic achievement; 2) determine whether learner-generated vignettes promote higher order thinking, such as application, analysis, synthesis, and evaluation; and 3) determine whether the use of vignettes is a preferred method of teaching and learning. These three objectives were addressed in a hybrid online course designed using vignettes with the Generative Learning Model.



In order to conduct this research, the researcher and instructor had to gather work and information from the participants in the Instructional Techniques course that addressed each of the questions. The instructor and researcher collected two sets of responses to teacher-generated vignettes provided in asynchronous discussions, diagrams, rubrics, learner-generated vignettes, and learning logs. Questionnaires addressing different teaching strategies and learning activities in the course were collected at the end of the course. The study considered the work of eight students pursuing their first Master Degree in Education at Duquesne University in the Instructional Techniques course that took place in the fall of 2003.

A close reading of the responses to the teacher-generated vignettes and the learner-generated vignettes was required by the researcher and three external readers who were chosen for their experience with scoring guides and rubrics for evaluating performance assessments and with the Taxonomy of Educational Objectives. The work read demonstrated various levels of academic achievement and different occurrences in higher order thinking. The learning logs and questionnaires revealed a number of benefits provided by the use of teacher-generated vignettes and learner-generated vignettes.

### Summary of Findings

Research Question 1: Will the student completion of teacher-provided vignettes, as they are presented in the Generative Learning Model, enhance academic achievement as measured in the following types of student work/ activities: asynchronous discussions, diagrams, and rubrics?

Participants scored highest in the first set of responses to teacher-generated vignettes in the *valid response* section, followed in decreasing order by the *analysis*,

*defense*, and *language* sections. There were minor score differences between the instructor and the external readers and inter-rater reliability was established. Section subscores in the second set of vignette responses followed the same order although there were significant score differences between the instructor and readers for three of the eight participants. In the *discussion* section subscore, all eight participants gave high ratings to their classmates for both sets of vignette responses. Six of the eight participants scored higher on the second vignette assignment than they did on the first assignment, suggesting that they quickly learned how to successfully complete the vignette assignment task.

Enhanced academic achievement was also determined by learner-generated diagrams and rubrics. Diagram scores ranged from 93%-100%, with a mean of 97.9%. Rubric scores ranged from 89%-100%, with a mean of 95.9%. All of the participants successfully completed the rubric assignment, albeit two with low B grades. Intercorrelations between the three assignments were not significant, which suggested that completing vignettes, creating diagrams, and creating rubrics were addressing different course curricula.

## Results

The overall increase in vignette scores from the first to second set and the high *valid response* and *analysis* subscores throughout were both expected, given the vignette assignment's link to the Generative Learning Model and its relevance to the participants' needs and experiences, both of which motivated them to solve problems (Wittrock, 1986). *Defense* subscores were lower in the first set of vignette responses than in the second set because some participants did not include definitions of key terms or provide

appropriate examples where required. These omissions were rectified in the second set. Since participants indicated that they had never completed this type of assignment before, the high subscores and improvement in the *defense* component were both encouraging results.

However, low *language* subscores were surprising. There were significant score differences between the instructor and readers concerning how clearly the response was written. It was possible that these differences stemmed from a different degree of familiarity with participants' writing styles and how they expressed their understanding of the material. It was not always clear whether or not an accurate definition was provided by the participants in their responses. The fact that all eight participants gave high ratings to their classmates for both sets of vignette responses suggested that the participants found their classmates' comments helpful when trying to understand course material.

The high diagram and rubric scores were also expected. These assignment tasks were more familiar to the participants and did not measure the same course content as the vignette responses. Vignette assignments were designed to measure participant's understanding of two secondary course texts, both presenting somewhat different material from the main course text from which the diagram and rubric assignments were generated. The high scores therefore provide some evidence of construct validity, viz., that academic achievement was enhanced when completing vignettes and creating diagrams and rubrics.

## Deduction

The purpose of this study was to investigate that when vignettes are used in the Generative Learning Model that academic achievement is enhanced. This study did show that having participants complete teacher-generated vignettes in an online asynchronous discussion environment and creating diagrams and rubrics enhanced academic achievement.

Research Question 2: Will the writing of learner-generated vignettes, as they are presented in the Generative Learning Model, promote higher order thinking including application, analysis, synthesis, and evaluation as measured in three different asynchronous discussions?

Data showed that the instructor determined the following frequencies in the higher levels of thinking: application was 31, analysis 23, synthesis 22, and evaluation 42. Based on external reader ratings, the total frequency of application was 39, analysis 20, synthesis 22, and evaluation 20. There was a significant difference between the frequency of analysis and the frequency of application determined by the instructor and the external readers. However, both the instructor and external readers determined close to the same number of frequencies for analysis and synthesis. Intercorrelations between the various levels of higher order thinking were not significant when comparing the different sets of learner-generated vignettes.

## Results

Occurrences in the levels of higher order thinking, application, analysis, synthesis, and evaluation, are consistent with current literature that indicates writing stories does require higher order thinking (Wittrock, 1990; Hambleton, 1996; Glau and Jacobsen,

2001). The four components, (application, analysis, synthesis, and evaluation), were not significantly correlated. Participants evidently engaged in some levels of higher order thinking (e.g., synthesis), and not in others, (e.g., application). Nor was there complete agreement between the instructor and readers concerning the frequency of each component, most likely due to differences in judging from a written vignette what comprises each level of thinking when writing that vignette, (e.g., when determining the frequency of evaluation, the instructor examined the participants' questions accompanying their vignettes while the readers did not).

The participants wrote three vignettes but the frequency of higher order thinking did not increase from set to set. Since the participants had already completed teacher-generated vignettes, observed the instructor writing vignettes, and had been instructed how to write their own vignettes, they were evidently ready to engage in higher order thinking from the very first writing task.

### Deduction

The purpose of this study was to investigate whether higher order thinking can occur in students when they write vignettes as presented to them within the Generative Learning Model. This study has shown that students can demonstrate at least one of the following levels of higher order thinking when writing vignettes as a generative learning activity: application, analysis, synthesis, and evaluation.

Research Question 3: Do students prefer vignettes to lectures, teacher demonstrations, student demonstrations, projects, online slide presentations or online discussions as shown in student reflective learning logs and a questionnaire (distributed at the end of the course)?

Data show that participants rated the completion of teacher-generated vignettes the highest among all other teaching strategies and learning activities used in the Instructional Techniques course. Most of the teaching strategies and learning activities received an average of a 4.5 rating, including the use of learner-generated vignettes. Online discussions and online slide presentations received a 4.63 average rating. Other teaching strategies and learning activities aside from learner-generated vignettes that received a 4.5 rating are teacher modeling of instructional techniques, student demonstrations, diagrams, and reflective learning logs. The use of rubrics and lectures received the lowest average rating, 4.3.

Data also showed that among the learning activities considered by participants when learning other content material, completion of teacher-generated vignettes ranked the highest. Teacher modeling was ranked second highest, after which both learner-generated vignettes and rubrics received the same rating. Lectures received the lowest ranking.

Among the teaching strategies considered by participants when teaching their own classes, teacher modeling received the highest ranking. This was followed by teacher-generated vignettes, and then by construction of rubrics. Student demonstrations were ranked fourth, creating diagrams fifth, and learner-generated vignettes sixth. Online presentations and online discussions ranked seventh and eighth, respectively. Reflective learning logs were ranked ninth, and lectures were ranked tenth.

The comments in the questionnaires and learning logs indicated that overall, the participants thought the use of teacher-generated vignettes was valuable. As a learning activity, participants found answering teacher-generated vignettes helped them when they

read and applied what they learned and to achieve higher order thinking, including solving problems. Several participants indicated that they found it helpful to look at the way others had completed the teacher-generated vignettes. The participants also indicated that they thought creating vignettes was challenging, but provided a number of benefits, including helping them think creatively (P1, P5, P6, and P7), helping them address certain issues they were currently facing in the teaching of their own classes (P4 and P7), and realizing the significance of creating them for their own classes (P2 and P8). P7 indicated a preference for answering teacher-generated vignettes, and P4 indicated a preference for writing vignettes.

Participants P2, P4 and P5 indicated a sincere interest in incorporating teacher-generated vignettes in their own teaching. As a teaching activity, participants noted that teacher-generated vignettes provided ways for students to creatively solve different problems, could allow teachers to assess students in an alternate way, and to help students relate to the content of the class. Regarding whether their own students should create vignettes, some participants believed that there were certain subjects, such as technology, for which it would be difficult to have students create meaningful vignettes, others believed that younger students (around first and second grade) would not be capable of creating vignettes on their own, although they might be able to with assistance from others; but most believed that having their students write vignettes could be a meaningful activity.

## Results

As expected, participants found vignettes to be valuable in their own teaching and learning experiences. They rated completing teacher-generated vignettes highest of all

teaching strategies and learning activities used in the Instructional Techniques course.

They also ranked this activity highest as a preferred learning activity in other educational situations. Finally, they ranked completing teacher-generated vignettes second highest as a preferred teaching strategy when teaching their own classes. Their strong preference for vignettes is noteworthy, especially considering their lack of prior vignette experience and their extensive experience with the other modes of instruction.

As a learning activity, participants found completing teacher-generated vignettes helped them when they read and applied course material. Several participants indicated that they found it helpful to review how others completed vignettes. They also noted that teacher-generated vignettes provided an alternative assessment tool when measuring students' ability to solve problems creatively.

When considering the second use of vignettes in this study, participants ranked the vignette writing task high as a learning activity but significantly lower as a teaching strategy. They indicated that they thought creating vignettes was a challenging but beneficial task, helping them to think creatively, address issues they were currently facing in their own teaching, and realize the significance of creating them for their own classes. The researcher believes that unlike other forms of narratives such as case studies and case stories, which take longer to create and analyze (Maslin-Ostrowski & Ackerman, 1998), vignettes are more versatile, in that they can be written by students who don't believe that they are extremely creative or who are not able to write longer narratives as easily. They felt, however, that there were certain subjects, such as technology, for which it would be difficult to have students create meaningful vignettes and that first and second graders were probably not capable of creating vignettes without assistance from others.



Participants nevertheless believed that having their students write vignettes would be a meaningful activity.

Participants preferred completing teacher-generated vignettes to nearly all other learning activities and teaching strategies, including constructing rubrics and diagrams, student demonstrations, online presentations and discussions, reflective learning logs, and lectures. Several participants indicated that they planned to use teacher-generated vignettes in their own teaching. Participants preferred the vignette writing task to most learning activities and about half of the teaching strategies, indicating their confidence that vignette writing would work successfully in their classrooms, depending on student age level.

### Deduction

The purpose of this study was to determine whether the use of vignettes was preferred to other teaching strategies and learning activities. This study showed that vignettes, either as a completion task or as a writing task, was the preferred learning activity and teaching strategy among the participants.

### Conclusions

Based on the data gathered and analyzed for this study, the researcher has come to the following conclusions:

1. This study showed that having students answer teacher-generated vignettes and having them respond to other responses to these vignettes in an asynchronous environment can help them in their academic achievement.
2. This study showed students achieved higher levels of the Taxonomy of Educational Objectives when creating their own vignettes.

3. This study showed that the use of teacher-generated vignettes is preferred to several other teaching strategies and learning activities, such as reflective learning logs, student demonstrations, constructing diagrams and rubrics, online presentations and lectures.
4. This study showed that some teachers prefer the use of learner-generated vignettes to other activities such as online discussions, student demonstrations, constructing diagrams, online presentations, reflective learning logs, and lectures. Also, some teachers prefer the use of learner-generated vignettes to other teaching strategies such as online presentations, reflective learning logs, and lectures.

#### Educational Implications

Based on the findings of this research, the researcher suggests the following recommendations:

1. Teachers can successfully use vignettes with adult learners within the context of the Generative Learning Model to encourage higher order thinking and enhance academic achievement.
2. Completing teacher-generated vignettes and writing vignettes can enhance academic achievement, regardless of whether they are combined with other learning activities.
3. Completing teacher-generated vignettes is a useful assessment tool and an effective instructional method.
4. Completing teacher-generated vignettes and writing vignettes can measure different course content from more traditional forms of assessment.

5. Because they are text-based, vignettes can be used effectively in a hybrid online course, partly face-to-face and partly online.
6. Teachers can learn how to write appropriate vignettes for students of any grade level.
7. Age level is likely to be a factor when determining if students are ready to write their own vignettes.
8. Unlike other forms of narratives which take longer to create and analyze, (e.g., case studies), vignettes can be written by students who do not believe they are sufficiently creative or able to write long narratives.

#### Limitations

It should be reiterated that this study only involved eight participants. All results are merely trends worthy of further exploration. Second, the various sublevels within application, analysis, synthesis, and evaluation were not investigated and may provide further insight into the effectiveness of vignettes as a learning activity and teaching strategy. Third, because the Instructional Techniques course was delivered in a blended format, the study's results concerning the effectiveness of vignettes may not apply to a purely online course. Fourth, scoring differences between the instructor and external readers might have been avoided with additional training.

#### Recommendations

The researcher makes several recommendations for further research:

1. Comparison studies using vignettes and other well-established generative learning activities to determine their effects on academic achievement and higher order thinking, (e.g., a vignette group, a summaries group, with or

without an additional control group), should be considered. Grabowski (2004, pp. 739-741) has also recommended similar studies. Many other studies (Wittrock & Kelly, 1984; Leigh, 1989; Davis & Hult, 1997; McGuire, 1999) have examined the different types of generative learning activities in a similar manner.

2. Either a quasi-experimental or an experimental study with a significantly larger  $n$  that replicate the current study is recommended. Many of the studies held that considered the Generative Learning Model have been experimental studies (Rickards & August, 1975; Linden & Wittrock, 1981; Wittrock & Kelly, 1984; Wittrock & Alesandrini, 1990; Johnsey, Morrison & Ross, 1992; Davis & Hult, 1997).
3. Studies that compare the use of lectures to vignettes with significantly larger groups of students (where  $n$  is 75 or greater) should be considered. This study showed that vignettes have been successful with a small group of students, and that these students preferred the use of vignettes, whether teacher-generated or learner-generated, to lectures. It would be interesting to note how vignettes compare to lectures, which have been the traditional format used in colleges and in universities, especially with large groups of students.
4. Other studies to determine whether the use of vignettes assists in critical reading skills and in problem-solving skills are recommended. This study has already shown that the use of vignettes would result in enhanced academic achievement and higher order thinking.

5. Studies that concern the various sublevels of the levels of the Taxonomy of Educational Objectives (application, analysis, synthesis, and evaluation) not considered for this study, should be considered. The researcher found one study (Slifkin, 2000) which did consider the sublevels of higher order thinking in student journals; for example, the analysis level includes sublevels of identifying elements, define relationships among and between the elements, and recognition of organizational principles (Bloom et al., 1956, p. 145).
6. Studies that describe the effects of combining vignettes with other teaching strategies (e.g., role playing), should be considered. The use of vignettes, both teacher-generated and learner-generated, as compared to other teaching strategies and learning activities, was considered in this study. One of the participants had noted that the combination of vignettes and role-playing was a possibility with her own students. Even though research on role-playing and generative activities was found Stiebel (1988), this particular study compared role-playing to other generative activities, and had not considered role-playing in conjunction with generative activities.
7. Studies that observe the effect of collaboration on vignette performance are recommended. Research has shown that collaborative activities are beneficial to adults (Brookfield, 1986; Jones, Valdez, Nowakowski, & Rasmussen, 1994; Vella, 1994). There has been at least one study done (e.g. Hooper, Sales & Rysavy; 1994) that compared how well students performed individually versus how well they did in groups (pairs) when taking part in a specific

generative learning activity (e.g. summaries). A similar design could be considered.

8. Studies comparing the effect of participants' background related to vignette context on vignette completion performance should be conducted. This study ensured that the teacher-generated vignettes created were specifically created to meet the needs or illustrate situations experienced in the backgrounds of participants.
9. Studies that describe or observe the use of vignettes with children, to determine whether they are capable of completing or creating vignettes, are recommended. The population for this study was adults. Some of the participants noted that the students in their classrooms (specifically, primary grades) may or may not be able to complete or create vignettes.

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## Appendix A

### Background Questionnaire

## Background Questionnaire

Name: \_\_\_\_\_

Please complete the following questionnaire by circling the letter indicating your answer.

Provide details where requested.

## Background Information

1. Indicate one of the following:
  - a. Male
  - b. Female
2. Which of the following applies to you:
  - a. You want to learn more about classroom /workshop management
  - b. You want to learn more about teaching / training techniques
  - c. Other \_\_\_\_\_
3. What degree are you currently pursuing?
  - a. First Master's Degree
  - b. Second Master's Degree
  - c. Doctoral Degree
  - d. Undergraduate

## Teaching Experience

4. Number of years teaching experience:
  - a. None
  - b. 1-3
  - c. 4-9
  - d. 10-15
  - e. 16-20
  - f. More than 20
5. Subject(s) you are currently teaching:
  - a. Math
  - b. English
  - c. Science
  - d. Music
  - e. History/Social Studies
  - f. Foreign Language
  - g. Physical Education
  - h. Computers
  - i. Business
  - j. Other \_\_\_\_\_
  - k. None

6. At which level do you teach/train:
  - a. K-6
  - b. 7-12
  - c. Post secondary (college / university)
  - d. Corporate Environment
  - e. Other \_\_\_\_\_
  - f. None
7. Have you ever used stories or case studies in your teaching, (e.g., presenting new material, explaining a new concept, providing an example, assessing student performance)?
  - a. Yes
  - b. No

#### Online Learning Experience

8. Which of the following online, web based formats have you experienced in a course management system:
  - a. Asynchronous discussion (online communication done via posting of messages, but not at the same time as other postings of messages)
  - b. Synchronous discussion (online communication that occurs in real time)
  - c. Correspondence
  - d. Video conference
9. Which of the following course management systems did the teacher use for the setup of the online course:
  - a. Blackboard
  - b. WebCT
  - c. FirstClass
  - d. Other: \_\_\_\_\_
  - e. None
10. Which best describes the ratio of online learning (class time spent via network) to classroom learning (class time spent in classroom)
  - a. 50% online / 50% in classroom
  - b. 40% online / 60% in classroom
  - c. 30% online / 70% in classroom
  - d. 10% online / 90% in classroom
  - e. Other \_\_\_\_\_
11. Which best describes your experience in the online course(s) you have taken:
  - a. Better than an "in classroom" course
  - b. About the same as an "in classroom" course
  - c. Not as good as an "in classroom" course



## Appendix B

## Diagnostic Pretest

## Diagnostic Pretest

Name: \_\_\_\_\_

This test will be a combination of vignettes and short essay questions to determine students' knowledge of instructional techniques.

1. Name the eight multiple intelligences, provide a brief description of each, and give an example of how you would use them to teach your subject.
2. Name and describe the types of teacher portfolios can have. Which one would be the most appropriate for you, and why? What do you have that you can put into the portfolio?
3. What is a thinking frame? Provide an example of a thinking frame you can use to teach either a creative thinking skill or a critical thinking skill.
4. A friend of yours is responsible for setting up a nature-hike for a group of inner-city school students. This particular group of students comes from a very poor background—some even belong to gangs. Your friend has had experience with this population, but is not sure how she can set up the experience so that the children can get the most out of it. How would you help your friend? Describe at least one structure that helps to create best practice classrooms / environments that she can incorporate with this activity. Why did you select this (these) particular structure(s)? Identify and define the elements of best practice that she can consider when planning this outing. What specific activities can you advise your friend when setting up the nature hike?

5. It is at the end of the school year. You are given a catalog of software packages and told to choose one to use for next year's classes to enhance the classes you teach. How do you go about selecting an appropriate software package? Which software package do you choose? Why?

## Appendix C

### K-W-L Chart

Date: \_\_\_\_\_

[illegible]

## Appendix D

## Teacher-Generated Vignettes

## Samples of Teacher-Generated Vignettes

The following three teacher-generated vignettes were created for students, based on their backgrounds and on the material from *Methods that Matter: Six Structures for Best Practice Classrooms* course text by Harvey Daniels and Marilyn Bizar (1998).

### Vignette 1:

Sam teaches at a four-year technical school located in the city. He has to teach an intermediate course in Microsoft Word. Even though it is assumed that the students entering the school have had some access to this program, Sam realizes that there are not only students who need a lot of help but there are students who are much more advanced. This is a required course, and unfortunately there is no policy in place that allows students to test out of the course.

In trying to get to know his students better, he gives everyone a K-W-L chart and realizes that students need or want to know more about some of the following: formatting pages, working with sections, desktop publishing, merging information from Word into other applications such as Excel and Access, how to write macros, and creating, applying, and editing templates.

Sam is willing to try some different approaches, because he realizes that he needs to do more than just use the whole-classroom approach.

Consider the following questions:

1. What is one of the main problems of the problems Sam encounters in this vignette? Considering the viewpoints of the students, school, and the

community, what are at least two different authentic experiences that could bring the students together?

2. Sam tried a K-W-L chart to get to know his students better. Name and describe one other representing-to-learn method that Sam can use to see how his students are progressing throughout the course and explain why you would advise Sam to use this method.
3. Sam is considering either trying a small group activity or a classroom workshop. Decide on how to give him advice on either one of these and then consider one of the following:
  - If you advise Sam on a small group activity, name and describe a model of a small group activity that would work in this situation and explain how you would advise him to set this up for this class.
  - If you advise Sam on a classroom workshop, provide an example of a “product” the students would produce, and explain what Sam needs to do to make this workshop activity successful.
4. Which of the following reflective assessments would you advise Sam to try for this class: portfolios, conferences, anecdotal records, checklists, and performance assessments? Why would you advise Sam to use this particular reflective assessment?



## Vignette 2

At Lincoln Grade School, which is a small school in a suburban area, Carol is responsible for teaching PowerPoint to children in grades 1 through 3. She notices that in one of her classes, several of the students are shy and are anxious about participating in class. She also knows that several of these students don't have access to the same resources at home and are not able to ask their parents for help on different assignments. For example, some of the students have come into class with CDs of videos and a multitude of digital pictures that were taken at home or on vacations.

During the class period, students seem interested in what Carol is doing and explaining; however, when it comes time to work on their own projects, Carol is surprised at how many questions the students have, and how lost some of them seem to be. To minimize the time she has to spend individually with students, Carol has set aside time in the beginning to explain and demonstrate the lesson, requiring students to watch her before she walks them through the lesson. To help students indicate the problems they had from the previous lesson, Carol tried the "Admit Slip" idea, so that students would be required to write down between one and three questions they from the previous lesson. She then would address the different questions before continuing with any new information. The students seem to like the idea of the Admit Slip; however, Carol believes that she should try a few other instructional techniques.

Consider the following questions:

1. What is one of the main problems Carol encounters in this vignette?

Considering the viewpoints of the students, school, and the community, what

are at least two different authentic experiences that could bring the students together?

2. Carol tried the “Admit Slip” idea so that her students had another way to let her know what they needed to know for a particular lesson. Aside from the “Exit Slip” idea, name and describe one other representing-to-learn method that Carol can use to make sure her students understand what happened in the lesson that day and explain why you would advise Carol to use this method.
3. Carol is considering either trying a small group activity or a classroom workshop. Decide on how to give her advice on either one of these and then consider one of the following:
  - If you advise Carol on a small group activity, name and describe a model of a small group activity that would work in this situation and explain how you would advise her to set this up for this class.
  - If you advise Carol on a classroom workshop, provide an example of a “product” the students would produce, and explain what Carol needs to do to make this workshop activity successful.
4. For this class, which of the following reflective assessments would you advise for Carol: portfolios, conferences, anecdotal records, checklists, and performance assessments? Why would you advise Carol to use this particular reflective assessment?

### Vignette 3

Pam teaches reading to second graders in Martin Luther King School, located in the city. The students come from various backgrounds. For example, Pam knows which children have siblings who are part of a gang, which children are well-off and rather isolated from some of the violence that takes place in the streets, and which children are “somewhere in the middle,” or who are trying to live with others who may or may not live in gangs but don’t want to belong to one themselves. Some of these same children definitely don’t get enough to eat, and she also knows that most of the children definitely don’t receive the support they need at home, as shown through constant adult supervision, so that they can show respect for others.

Pam has read about Maslow’s Hierarchy of Needs, and has begun a routine of providing the students a healthy snack (preferably one that relates to what they are reading at the time), and a short time to help students develop a sense of importance and belonging. She has done this to promote a “safe environment” in which they can express themselves responsibly without fearing repercussions during or after school. She has found that when she works with the students one-on-one that they are able to grasp the necessary concepts and are able to progress somewhat. However, when she has them work by themselves, or in groups, she has had some difficulty with some of the students calling others names or verbally attacking others. Nevertheless, she still believes that at some point the students should work in groups for at least one or two projects, so that they can benefit from each other’s learning. She also realizes that she needs to try some other instructional techniques.

1. What is one of the main problems Pam encounters in this vignette?

Considering the viewpoints of the students, school, and the community, what are at least two different authentic experiences that could bring the students together?

2. Pam has set aside time for students to develop a sense of importance and belonging. Name and describe one representing-to-learn method that Pam can use during this time and explain why you would advise Pam to use this method.
3. Pam is considering either trying a small group activity or a classroom workshop. Decide on how to give her advice on either one of these and then consider one of the following:
  - If you advise Pam on a small group activity, name and describe a model of a small group activity that would work in this situation and explain how you would advise her to set this up for this class.
  - If you advise Pam on a classroom workshop, provide an example of a “product” the students would produce, and explain what Pam needs to do to make this workshop activity successful.
4. For this class, which of the following reflective assessments would you advise for Pam: portfolios, conferences, anecdotal records, checklists, and performance assessments? Why would you advise Pam to use this particular reflective assessment?

The following two vignettes were created by the instructor so that the participant's background and the content of the text, *Professional Portfolios for Teachers*, by Lawrence Tomei and Bonita Wilcox (2000) were considered.

#### Vignette 1

You taught a class last semester and had decided on using portfolios as an activity and an assessment. You decided on portfolios, because you realize that both you and your students would be able to keep track of their learning.

At first, some of the students were reluctant to work on their portfolios. However, by the end of the semester, all of the students realized what a great idea working on the portfolios is. In fact, you were asked by the other faculty and administration to provide a workshop that would show them how to successfully implement portfolios in the classroom.

The following questions address what you had to do to be successful with the portfolio activity and assessment.

1. Name and describe the type of class are you teaching. What type of portfolio (intelligent or smart) would you have them do? After defining this type, explain why you would have the students work on this type.
2. What level (learner, expert, scholar) should the students focus on? After defining this level of portfolio, explain why you would have your students work with this level.
3. Define what is meant by collection points. Consider and state the problem that you encounter in this vignette, and then indicate eight different collections

points you would have the students develop for this portfolio that could address this problem. Also indicate which of the folders (collecting, working, and showcase) students would use to store these particular collection points.

4. Name and define the two types of assessments that should be considered for the portfolios. How would you consider these when you assess the portfolios? Name three different people who would be a part of the assessment process and explain why they should be a part of the assessment process.

## Vignette 2

You are interested in getting a new job. After thinking about the type of position you would want, you decide to go about developing your own portfolio. You realize this is the best way to really display what you have learned, what you have accomplished, and what you are currently working on. You also realize that because the job market is tight, that you need a way to “stand out” from everyone else.

Finally, at one point you have an interview for the “perfect job.” The interview goes well, and you were told later that the interviewer was really impressed with the portfolio you presented.

The following questions address what you had to do to develop a successful portfolio:

1. Name and describe the type of job you are pursuing. What type of portfolio (intelligent or smart) would you develop? After defining this type of portfolio, explain why you would develop this type.
2. What level (learner, expert, scholar) should you focus on? After defining this level of portfolio, explain why you would work with this level.
3. Define what is meant by collection points. Consider and state the problem you face in this vignette, and indicate eight different collections points you would include in your portfolio that could address this problem. Also indicate which of the folders (collecting, working, and showcase) you would use to store these particular collection points.
4. Name and define the two types of assessments that should be considered for your portfolio. How would you consider these when you assess your

portfolio? Name three different people who would be a part of the assessment process and explain why they should be a part of the assessment process.



## Appendix E

### Scoring Guide for Evaluating Participant-Completed Vignettes that are Teacher-Generated (in Asynchronous Discussions)

Scoring Guide for Evaluating Participant-Completed Vignettes  
that are Teacher-Generated (in Asynchronous Discussions)

<b>Criteria</b>	<b>Score</b>
<b>Valid Response</b>	
Participant answered all parts of the question	5
Analyses and responses addressed the question	10
<b>Section Total</b>	<b>15</b>
<b>Analysis</b>	
Included appropriate contextualized resource material (use of book and notes)	5
Addressed at least 3 points of view (where appropriate) including clear and focused statement of agreement / disagreement	10
<b>Section Total</b>	<b>15</b>
<b>Defense</b>	
Included relevant evidence in support for each of the viewpoints	10
Appropriate references (including quotations and page numbers) were made to readings and research to justify answers (At least one was made per question)	10
Accurate definitions and components of key terms were included for each question.	10
Provided appropriate examples of key terms and issues (where required)	10
Defined the problem and suggested viable resolutions (where required)	10
<b>Section Total</b>	<b>50</b>
<b>Discussion</b>	
The participant's response provided a thoughtful contribution that has added to the understanding of others	6
Student has responded appropriately to at least two other postings	4
<b>Section Total</b>	<b>10</b>
<b>Language</b>	
Words selection made it is easy to understand just what the writer meant.	1
Language and phrasing was appropriate for the audience	2
Sentences were constructed in a way that underscores and enhances the meaning of how they answer the vignette	1
Spelling was correct	2
Punctuation was accurate	2
Grammar and usage were correct	2
<b>Section Total</b>	<b>10</b>
<b>GRAND TOTAL</b>	<b>100</b>

## Appendix F

## Scoring Guide for Evaluating Participant-Developed Diagrams

## Scoring Guide for Evaluating Participant-Developed Diagrams

Criteria	Comments	Points Earned	Possible Points
<b>The Diagram includes the following:</b>			
Name of Diagram and participant's name (as instructor)			5
An accurate representation of the diagram was made			10
Directions to participant's students on how to fill in the diagram			15
Provided follow-up activity (what participant's students do after the diagram is completed)			10
<b>The Write-up includes the following:</b>			
Name of diagram			5
Main purpose of diagram			5
Objectives that were met with the diagram			10
How diagram was used (including subject, student age)			10
Description of how participant's students would complete the diagram			15
How the participant (as the teacher) would assess his own students			15
<b>TOTAL</b>			<b>100</b>

## Appendix G

## Scoring Guide for Evaluating Participant-Developed Rubrics

## Scoring Guide for Evaluating Participant-Developed Rubrics

<b>Criteria</b>	<b>Comments</b>	<b>Points Earned</b>	<b>Possible Points</b>
Included the task to be completed (at the top) and participant's name			5
Followed the format provided in class			5
Included clearly written "descriptors" or statements that describe each level of the (these would go under the numbers indicating the levels in the columns going across)			5
Included 3 to 6 unique criteria that are clearly written and relate to the task. (These criteria descriptions would go in the first column)			20
Included "indicators" or specific, concrete examples or telltale signs of the criteria to be met (These would go in the rest of the cells in the table)			50
Included a scale of points to be assigned (i.e. how many points do students get depending on where their work "falls" in the rubric), as well as how grades would be assigned).			15
<b>TOTAL</b>			<b>100</b>

## Appendix H

## Evaluating Bloom's Levels of Cognitive Activity in Student Work

### Evaluating Bloom's Levels of Cognitive Activity in Student Work

This table was used to determine higher order thinking in participant-generated vignettes.

Level of Bloom's Taxonomy	Evidence in Student Work
Application	<ul style="list-style-type: none"> <li>• Manipulates or modifies ideas or concepts</li> <li>• Relates ideas or transfers concepts to a new situation</li> <li>• Illustrates new application and/or predicts outcomes</li> </ul>
Analysis	<ul style="list-style-type: none"> <li>• Describes parts of complex ideas or concepts</li> <li>• Finds similarities and differences and draws conclusions</li> <li>• Organizes and plans a project</li> </ul>
Synthesis	<ul style="list-style-type: none"> <li>• Hypothesizes, experiments, organizes, and reports</li> <li>• Defines problem, gathers information, suggests solutions</li> <li>• Combines complex ideas into a graphic design</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>• Defends thinking in discussion and/or presentation</li> <li>• Uses a holistic approach in evaluating others</li> <li>• Chooses appropriate criteria to appraise one's self</li> </ul>
<p><i>Note:</i>            From <i>Instructional Design and Implementation of a Best Practice Model of Online Teaching and Learning</i>, by L.C. Wojnar, 2000. Unpublished doctoral dissertation, Duquesne University, USA.</p>	



## Appendix I

## Evaluating Higher Order Thinking in Participant-Generated Vignettes (An Example)

### Evaluating Higher Order Thinking in Participant-Generated Vignettes (An Example)

The following vignette was provided to the external readers for their review, after which the table illustrating the levels of higher order thinking that were achieved were discussed. This table also represented all of the possibilities for higher order thinking the instructor and researcher considered in the development of vignettes.

#### Sample Learner-Generated Vignette

Your parents have decided that they want to take a month-long vacation. They want to visit different parts of the country. They plan on taking the family on a cross-country road trip. Your father wants to visit Yellowstone National; your mother wants to visit the Grand Canyon; your older brother wants to visit Las Vegas; your younger sister wants to visit Disney World. However, your parents do not know where you want to go yet so they are leaving it up to you to plan.

1. If you could visit any one place in the United States, where would it be and why?
2. Including your one place that you would like to visit, what route would you take to visit all of the places you and your family want to see?
3. Plan a month long schedule of the number of days you would be visiting each attraction. For example, August 1-5 we will be in Disney World, etc.

#### Explanation:

This would be for a fifth grade social studies class. Usually fifth grade social studies focuses on the country so I would be teaching geography and directional skills. I came up with the vignette because I would love to go on a cross-country trip next summer and I was thinking about it and I thought it would be fun for students to come up with places of

interest to visit along with plan their vacation for their families. I hope to get a lot of different places around the U.S. that the kids would like to visit and their reasoning. Also, I would like to see how students would plan their routes and schedules and see if they make sense. For example, when they are planning their routes they need to know what states these attractions are in because it would not make sense to travel to Las Vegas, then to Disney World in Florida, and then to the Yellowstone. It would waste a lot of time so they need to research where these places are if they don't know already.

### Determining Levels of Sample Participant-Generated Vignettes

Level of Higher Order Thinking	Reasoning	Number of Occurrences
Application	Predicted outcomes in the summary write-up	1
Application	Transferred his/her understanding of how the instructor wrote a vignette to writing one for his/her own subject	1
Analysis	Organized info and went through some planning to create a meaningful vignette	1
Synthesis	Wrote a narrative with story elements – Gathered info needed for writing the vignette, which included a problem and had students think through how to solve the problems by including questions at the end	1
Evaluation	Participant's thinking was explained or "defended" at the end	1
Evaluation	Participant uses a "holistic" approach in the way the questions were written – that is, different types of questions were written so that the student's knowledge, opinion, and problem solving skills were required.	1

## Appendix J

## Scoring Guide for Participant-Generated Vignettes

## Scoring Guide for Participant-Generated Vignettes

<b>Criteria</b>	<b>Category</b>	<b>Score</b>
<b>Context</b>	Vignette simplified a real-life situation	5
	Subject was clearly recognizable	5
	Problem was clearly identified	4
	<b>Section Total</b>	<b>14</b>
<b>Story Elements</b>		
	Included one or more main characters	3
	All of the participant's students either have experience with the setting or do not	2
	The vignette had a plot that at least has a beginning and middle (if truncated vignette) or beginning, middle and end (if abridged vignette)	5
	The plot told the events in logical order	5
	<b>Section Total</b>	<b>15</b>
<b>Content</b>		
	Vignette was either purposely left incomplete or is vaguely written so that multiple solutions (to the questions) can be defended	5
	There were at least 3 questions that require the participant's students to answer the vignette	3
	The questions encouraged independent thinking and unique responses	5
	The questions had the participant's students do one or more of the following: provide examples, read through and critiques a situation, explain a point of view, recall an experience, or solve a problem	5
	The vignette was fictional and original	5
	The vignette was written as a narrative and was short (1–3 paragraphs, <250 words)	7
	<b>Section Total</b>	<b>30</b>
<b>Language</b>		
	Words selection made it is easy to understand just what the writer meant	1
	Language and phrasing was natural, effective and appropriate for the audience	2
	Spelling was correct	1
	Punctuation was accurate	1
	Grammar and usage were correct	1
	<b>Section Total</b>	<b>6</b>
<b>Explanation</b>		
	Included what the participant was trying to teach	5
	Included how the participant came up with the vignette	5
	Included the objectives that were considered when the vignette was written	10
	Explained how situation presented in the vignette was either familiar or not familiar to the participant's students	5
	Explained the types of responses expected or anticipated	10
	<b>Section Total</b>	<b>35</b>
	<b>GRAND TOTAL</b>	<b>100</b>

## Appendix K

### Rubric for Participant-Completed Vignettes that are Teacher-Generated (in Asynchronous Discussions)

Rubric for Participant-Completed Vignettes that are Teacher-Generated  
(in Asynchronous Discussions)

Excellent	Above Average	Average	Poor
<b>Valid Response</b>			
Student answered all parts of the question – <b>5</b>	Student answered all but one part - <b>4</b>	Student answered all but 2 parts - <b>2</b>	Student answered all but 3 or more parts - <b>0</b>
Analyses and responses addressed the question - <b>10</b>	Analyses and responses addressed $\frac{3}{4}$ of the question - <b>8</b>	Analyses and responses addressed $\frac{1}{2}$ of the question - <b>5</b>	Analyses and responses addressed less than $\frac{1}{2}$ of the question - <b>3</b>
<b>Section Total - 15</b>			
<b>Analysis</b>			
Included appropriate contextualized resource material (use of book and notes) - <b>5</b>	Included appropriate contextualized resource material for $\frac{3}{4}$ of questions - <b>4</b>	Included appropriate contextualized resource material for $\frac{1}{2}$ of questions - <b>2</b>	Included appropriate contextualized resource material for less than $\frac{1}{2}$ of questions - <b>0</b>
Addressed at least 3 points of view (where appropriate) including clear and focused statement of agreement / disagreement - <b>10</b>	Addressed at least 3 points of view (where appropriate) but did not include focused statement of agreement or disagreement - <b>8</b>	Addressed 2 points of view (where appropriate) but did have focused statement of agreement or disagreement - <b>6</b>	Addressed 1 or 2 points of view (where appropriate) but did not have focused statement of agreement or disagreement - <b>4</b>
<b>Section Total - 15</b>			
<b>Defense</b>			
Included relevant evidence in support for each of the viewpoints - <b>10</b>	Included relevant evidence in support for $\frac{3}{4}$ or more of the viewpoints - <b>8</b>	Included relevant evidence in support for $\frac{1}{2}$ or more of the viewpoints - <b>5</b>	Did include relevant evidence in support for less than $\frac{1}{2}$ of the viewpoints - <b>3</b>



<b>Excellent</b>	<b>Above Average</b>	<b>Average</b>	<b>Poor</b>
Appropriate references were made to readings and research (including quotations and page numbers) to justify answers (at least one reference to readings were made for each question) - <b>10</b>	Appropriate references were made to readings and research (including quotations and page numbers) to justify answers (one reference was made to readings for all but one question) - <b>8</b>	Appropriate references were made to readings and research (including quotations and page numbers) to justify answers (one reference was made to readings for all but two questions) - <b>5</b>	Appropriate references were made to readings and research (including quotations and page numbers) to justify answers (one reference was made to readings for all but three or more questions) - <b>3</b>
Accurate definitions and components were given of key terms - <b>10</b>	Accurate definitions and components were given for $\frac{3}{4}$ or more of key terms - <b>8</b>	Accurate definitions and components were given for $\frac{1}{2}$ or more of key terms - <b>5</b>	Accurate definitions and components were given for less than $\frac{1}{2}$ of key terms - <b>3</b>
Provided appropriate examples of key terms and issues (where required) - <b>10</b>	Provided appropriate examples of $\frac{3}{4}$ or more of key terms and issues (where required) - <b>8</b>	Provided appropriate examples of $\frac{1}{2}$ or more of key terms and issues (where required) - <b>5</b>	Provided appropriate examples of less than $\frac{1}{2}$ of key terms and issues (where required) - <b>3</b>
Defined the problem and suggested viable resolutions (where required) - <b>10</b>	Defined the problem and suggested only one viable resolution (where required) - <b>8</b>	Defined the problem but did not suggest a viable solution - <b>5</b>	Did not define the problem or suggest a viable solution - <b>0</b>
<b>Section Total - 50</b>			
<b>Discussion</b>			
The participant's response provided a thoughtful contribution that has added to the understanding of others. - <b>6</b> Note: for this question, students will be asked to rate all of the students' responses and e-mail them in. An average score will be calculated and given for this part of the rubric. Rating: 0 is none, 6 is highest			Student's response did not contribute to the discussion - <b>0</b>

<b>Excellent</b>	<b>Above Average</b>	<b>Average</b>	<b>Poor</b>
Participant responded appropriately to at least two other postings - <b>4</b>	Participant responded appropriately to one other posting OR Participant has responded inappropriately to other postings- <b>2</b>		Participant did not respond to any other posting - <b>0</b>
<b>Section Total - 10</b>			
<b>Language</b>			
Word selection made it is easy to understand just what the writer meant - <b>1</b>			Word selection was poor – the writer made it difficult to read - <b>0</b>
Language and phrasing were appropriate for the audience - <b>2</b>	Language was not appropriate for the audience at one point of the response - <b>1</b>		Language was not appropriate for the audience at more than one point of the response - <b>0</b>
Sentences were constructed in a way that underscores and enhances the meaning of how they answer the vignette - <b>1</b>			Sentences were not constructed in this way - <b>0</b>
Spelling was correct - <b>2</b>	1 mistake made - <b>1</b>		More than 1 mistake made - <b>0</b>
Punctuation was accurate - <b>2</b>	1 mistake made - <b>1</b>		More than 1 mistake made - <b>0</b>
Grammar and usage were correct - <b>2</b>	1 mistake made - <b>1</b>		More than 1 mistake made - <b>0</b>
<b>Section Total - 10</b>			
<b>GRAND TOTAL - 100</b>			

Appendix L  
Rubric for Evaluating Participant-Developed Diagrams

### Rubric for Evaluating Participant-Developed Diagrams

<b>Criteria</b>	<b>Above Average</b>	<b>Average</b>	<b>Poor</b>
<b>The Diagram included the following:</b>			
Name of Diagram and participant's name (as instructor) - <b>5</b>	One of these pieces of information was given - <b>3</b>		Participant did not include this information - <b>0</b>
An accurate representation of the diagram was made - <b>10</b>	Participant included all but $\frac{1}{4}$ of original components of diagram - <b>8</b>	Participant included all but $\frac{1}{2}$ of original components of diagram - <b>5</b>	Participant included less than $\frac{1}{2}$ of original components of diagram - <b>0</b>
Provided clear directions to the students on how to fill in the diagram - <b>15</b>	The directions left one question for the students to consider - <b>10</b>	The directions left more than one question for the students to consider - <b>5</b>	No directions were given - <b>0</b>
Provided appropriate follow-up activity (what students do after the diagram is completed) - <b>10</b>		Follow up activity was not appropriate for assignment - <b>5</b>	No follow up activity was given - <b>0</b>
<b>The Write-up included the following:</b>			
Name of diagram - <b>5</b>			Not provided - <b>0</b>
Main purpose of diagram - <b>5</b>		Main purpose not clear - <b>2</b>	Not provided - <b>0</b>
Included clear objectives that were met with the diagram - <b>10</b>	Most (but not all) of the objectives were clear OR Most (but not all) of the objectives related to the diagram - <b>5</b>	Most (but not all) of the objectives were not clear OR Most (but not all) of the objectives did not relate to the diagram - <b>3</b>	Objectives Not provided - <b>0</b>
How diagram was used (including subject, student age) - <b>10</b>		Explanation left out one of these components - <b>5</b>	Not provided - <b>0</b>
Description of how participant's students would complete the diagram - <b>15</b>	Description provided is not clear – left one question - <b>10</b>	Description provided is not clear – left more than one question - <b>5</b>	Description not provided - <b>0</b>

<b>Criteria</b>	<b>Above Average</b>	<b>Average</b>	<b>Poor</b>
How the participant (as the teacher) would assess his own students (including scale of points and what would constitute an A, B, etc.) - <b>15</b>	Explanation of assessment given, but scale of points is not explained clearly OR Scale of points is given, and explained well, but no overall explanation of assessment is given - <b>10</b>	Explanation of assessment is given, but no scale of points is given - <b>5</b>	Assessment not provided- <b>0</b>
<b>TOTAL - 100</b>			

Appendix M  
Rubric for Evaluating Participant-Developed Rubrics

### Rubric for Evaluating Participant-Developed Rubrics

<b>Excellent</b>	<b>Very Good</b>	<b>Average</b>	<b>Poor</b>
Includes task that is written clearly and participant's name - <b>5</b>	Includes participant's name but task is not written clearly - <b>4</b>	Either task or participant's name is missing - <b>3</b>	Does not include either- <b>0</b>
Followed format provided by instructor - <b>5</b>	Participant included most of components of rubric as indicated by the format - <b>4</b>	Participant included ½ of components of rubric as indicated by format - <b>2</b>	Participant followed another format - <b>0</b>
Included clearly written “descriptors” or statements that describe each level of the performance – these would go under the numbers indicating the levels in the columns going across) - <b>5</b>	All but one of the descriptors is stated clearly - <b>4</b>	All but two of the descriptors are stated clearly - <b>3</b>	More than two of the descriptors are not stated clearly - <b>0</b>
Included 3 to 6 unique criteria that were clearly written and related to the task (These criteria descriptions would go in the first column) - <b>20</b>	At least 2/3 or ¾ of the criteria included were unique, clearly described, and related to the task - <b>15</b>	Less than 2/3 or ¾ of the criteria included were unique, clearly described, and related to the task - <b>10</b>	There were less than 3 criteria included in the rubric - <b>5</b>
Included “indicators” or specific, concrete examples or telltale signs of the criteria to be met (These would go in the rest of the cells in the table) - <b>50</b>	At least 2/3 or ¾ of the indicators were clearly described and relate to the criteria - <b>35</b>	Less than 2/3 or ¾ of the indicators included were clearly described and relate to the criteria - <b>20</b>	None of the indicators included were clearly described - <b>10</b>
Included a scale of points to be assigned (i.e. how many points do students get depending on where their work “falls” in the rubric). This scale of points clearly indicated how many points were earned for each of the “indicators.” Also, grades were indicated for the final point totals. - <b>15</b>	At least 2/3 or ¾ of the indicators have points assigned to them OR Grades are not indicated for the final point totals - <b>10</b>	Less than 2/3 or ¾ of the indicators have points assigned to them - <b>5</b>	No scale of points was included - <b>0</b>
<b>TOTAL - 100</b>			

Appendix N  
Rubric for Participant-Generated Vignettes



Rubric for Participant-Generated Vignettes

<b>Excellent</b>	<b>Very Good</b>	<b>Average</b>	<b>Poor</b>
<b>Context</b>			
Simplified a real-life situation - <b>5</b>	Situation was unrealistic or not clear - <b>4</b>	Situation was complicated - <b>3</b>	Situation was complicated and unrealistic - <b>1</b>
Subject was clearly defined - <b>5</b>			Subject was not clearly defined - <b>1</b>
Problem was clearly defined - <b>4</b>			Problem was not clearly defined - <b>1</b>
<b>Section Total - 14</b>			
<b>Story Elements</b>			
One or more main characters were present - <b>3</b>			No characters were apparent - <b>0</b>
Setting was either one which all students have experience with or don't have experience with - <b>2</b>			It was possible that some students had experience with the setting and others would not - <b>0</b>
The vignette has a plot that has at least a beginning and middle (if truncated vignette) or beginning, middle, and end (if abridged vignette) - <b>5</b>		The plot is missing one of these elements - <b>3</b>	The plot is missing more than one of these elements - <b>0</b>
Plot tells events in logical order - <b>5</b>		The plot has one or two events that are not in a logical sequence - <b>3</b>	It is difficult to follow the plot - <b>0</b>
<b>Section Total - 15</b>			
<b>Content</b>			
Vignette was either left incomplete or was vaguely written so that multiple solutions (to the questions could be defended) - <b>5</b>			Vignette was complete or not vaguely written so that multiple solutions (to the questions) could be defended - <b>0</b>

<b>Excellent</b>	<b>Very Good</b>	<b>Average</b>	<b>Poor</b>
There were at least 3 questions posed at the end of the vignette that required the students to address the vignette - <b>3</b>	2 questions - <b>2</b>	1 question - <b>1</b>	No questions - <b>0</b>
The questions encouraged independent thinking and unique responses - <b>5</b>	Done for $\frac{3}{4}$ or more of questions - <b>3</b>	Done for $\frac{1}{2}$ of questions - <b>2</b>	Done for less than $\frac{1}{2}$ of questions - <b>0</b>
The questions had the participant's students do one or more of the following: provide examples, read through and critique a situation, explain a point of view, or describe something - <b>5</b>	Done for $\frac{3}{4}$ or more of questions - <b>3</b>	Done for $\frac{1}{2}$ of questions - <b>2</b>	Done for less than $\frac{1}{2}$ of questions - <b>0</b>
The vignette was fictional – completely original - <b>5</b>	The vignette was based on another story but names were changed and situation was slightly altered (true or fictional) - <b>3</b>		The vignette was based on a true story – character names and situation were not changed - <b>0</b>
The vignette was written as a narrative and was short (1–3 paragraphs, <250 words)- <b>20</b>	Written as a narrative but is more than 3 paragraphs, >250 words - <b>15</b>	Written as a narrative but is only made up of two sentences - <b>10</b>	Is not in a narrative form - <b>5</b>
<b>Section Total - 45</b>			
<b>Language</b>			
Words selection made it is easy to understand just what the writer meant - <b>1</b>			Word selection did not help make the narrative understandable - <b>0</b>

<b>Excellent</b>	<b>Very Good</b>	<b>Average</b>	<b>Poor</b>
Language and phrasing were natural, effective and appropriate for the audience - <b>2</b>		There was at least one incidence where language and phrasing were not appropriate for the audience - <b>1</b>	There was more than one incidence where language and phrasing were not appropriate for the audience - <b>0</b>
Spelling was correct - <b>1</b>			One spelling mistake was found - <b>0</b>
Punctuation was accurate - <b>1</b>			One punctuation mistake was found - <b>0</b>
Grammar and usage were correct - <b>1</b>			One mistake in either grammar or usage was found - <b>0</b>
<b>Section Total - 6</b>			
<b>Explanation</b>			
Included what the student was trying to teach - <b>5</b>		Was not clear as to what the student was trying to teach - <b>3</b>	Did not include what the student was trying to teach - <b>0</b>
Included how the student came up with the vignette - <b>5</b>		Was not clear as to how the student came up with the vignette - <b>3</b>	Did not include how the student came up with the vignette - <b>0</b>
Included the objectives that were considered when the vignette was written - <b>10</b>		Was not clear in explaining the objectives that were considered - <b>5</b>	Did not include the objectives that were considered - <b>0</b>
Explained the types of responses expected or anticipated - <b>15</b>	Explained $\frac{3}{4}$ or more of responses expected - <b>10</b>	Explained $\frac{1}{2}$ or more of responses expected - <b>5</b>	Explained less than $\frac{1}{2}$ of responses expected - <b>0</b>
<b>Section Total - 35</b>			
<b>GRAND TOTAL - 100</b>			

Appendix O

Student Learning Logs

## Student Learning Logs

These learning logs will be collected and commented on at the mid-term and final sessions of the course. You are required to write a total of five logs, approximately one page per log, to show your reflections on what you have learned and what you would like to apply in your own classroom. You will also be given the opportunity to provide me with some feedback, as to how you are doing in the course and whether you need any clarification or guidance. Each log is worth 30 points, making this assignment worth 150 points. The first four logs (one is required per book) should address the following questions (and be divided into the following sections):

- What did you learn from the class or from your readings? (Please be specific.)
- What teaching strategy(ies) appealed to you? Why?
- Which teaching strategies do you think are the most effective (in terms of student learning)?
- How would you use these strategies in the classroom?
- What clarification do you need at this point (on concepts or course activities)?
- Is there anything I can do to help you at this time?

In your fifth and final log, you need to comment on the use of vignettes in this course.

That is, you need to tell me...

- What did you think of the use of vignettes as a learning activity when you had to complete the vignettes?

- What did you think of the use of vignettes as a learning activity when you had to create your own vignettes?
- What you think now of the use of vignettes as a teaching activity when considering whether you would use vignettes in your own class for students to complete? Why?
- What you think now of the use of vignettes as a teaching activity when considering whether you would use vignettes in your own class for students to create? Why?

## Appendix P

## Questionnaire on Preference of Teaching Strategies and Learning Activities

## Questionnaire on Preference of Teaching Strategies and Learning Activities

Name: \_\_\_\_\_

DIRECTIONS: For each of the following questions, make comments on either the teaching strategy or learning activity described and circle the corresponding rating.

1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

1. Comments concerning the content of the lectures:

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I found the content of the lectures to be very effective.

Rating:        1        2        3        4        5

2. Comments concerning the content of the online slide presentations.

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I found the content of the online slide presentations to be very effective.

Rating:        1        2        3        4        5

3. Comments concerning the teacher modeling of instructional techniques (such as KWL chart, development of vignettes, etc).

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I found the teacher modeling of instructional techniques to be very effective.

Rating:        1        2        3        4        5



## 4. Comments concerning the student completion of teacher-generated vignettes

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I found completing the teacher-generated vignettes to be very effective.

Rating:      1      2      3      4      5

## 5. Comments concerning the content of the online discussions.

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I found the content of the online discussions to be very effective.

Rating:    1      2      3      4      5

## 6. Comments concerning student demonstrations of instructional techniques.

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I found the student demonstrations to be very effective.

Rating:    1      2      3      4      5

## 7. Comments regarding constructing diagrams.

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I found constructing diagrams to be very effective.

Rating:    1      2      3      4      5

8. Comments regarding constructing rubrics.

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I found constructing rubrics to be very effective.

Rating:    1       2       3       4       5

9. Comments regarding creating learner-generated vignettes.

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I found creating learner-generated vignettes to be very effective.

Rating:    1       2       3       4       5

10. Comments regarding reflective learning logs.

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I found reflective learning logs to be very effective.

Rating:    1       2       3       4       5

11. Below is a list of ten different ways to learn course material. Please place a 10 beside the item to which you would most prefer. Put a 9 beside the item that represents the second most desired way to learn course material. Continue with an 8, 7, 6, 5, 4, 3, 2 and 1 for the least preferred ways to learn course material.

Activity	Ranking (1 is lowest, 10 is highest)
Lectures	_____
Online slide presentations	_____
Teacher modeling of instructional techniques	_____
Student-completion of teacher-generated vignettes	_____
Online discussions	_____
Student demonstrations of instructional techniques	_____
Diagrams	_____
Rubrics	_____
Creating learner-generated vignettes	_____
Reflective learning logs	_____

12. Below is a list of ten different ways to consider when you teach course material.

Please place a 10 beside the item to which you would most prefer. Put a 9 beside the item that represents the second most desired way to teach course material.

Continue with an 8, 7, 6, 5, 4, 3, 2 and 1 for the least preferred ways to teach course material. (1 is the lowest and 10 is the highest).

Activity	Ranking (1 is lowest, 10 is highest)
Lectures	_____
Online slide presentations	_____
Teacher modeling of instructional techniques	_____
Student-completion of teacher-generated vignettes	_____
Online discussions	_____
Student demonstrations of instructional techniques	_____
Diagrams	_____
Rubrics	_____
Creating learner-generated vignettes	_____
Reflective learning logs	_____

13. Did vignette writing give you an opportunity to think or learn creatively? Please provide specific examples.
14. What did I forget to ask? What would you like to say about this experience?

## Appendix Q

## Consent Form



# DUQUESNE UNIVERSITY

600 FORBES AVENUE ♦ PITTSBURGH, PA 15282

## CONSENT TO PARTICIPATE IN A RESEARCH STUDY

- TITLE:** Using Vignettes to Develop Higher Order Thinking And Academic Achievement In Adult Learners in an Online Environment
- INVESTIGATOR:** Maria H. Kish  
317 Holiday Drive  
Pittsburgh, PA 15237  
Phone: 412-369-5048
- ADVISOR: (if applicable:)** Dr. William P. Barone,  
Chair of the Department of Instruction and Leadership,  
School of Education, Duquesne University  
412-396-6111.
- SOURCE OF SUPPORT:** This study is being performed as partial fulfillment of the requirements for the doctoral degree in Instruction and Leadership at Duquesne University.
- PURPOSE:** This study will research the use of vignettes as a teaching strategy and learning activity in the Generative Learning Model in an online course. You are being asked to participate in the research project “Using Vignettes to Develop Higher Order Thinking And Academic Achievement In Adult Learners in an Online Environment” by agreeing to allow your background information, K-W-L charts, course work, discussions (both online and in-class), diagnostic test results, learning logs, and questionnaire on preference of teaching strategies and learning activities to be used from the Instructional Techniques course. These are the only requests that will be made of you.
- RISKS AND BENEFITS:** Participation in this study will hopefully allow future teachers to be able to better utilize certain teaching strategies and learning activities in their classroom. You will simultaneously be a student in my class and a participant in my research study, but neither your participation, non-participation, nor content of responses will affect your grade. The final questionnaire,

which evaluates aspects of this course, will not be reviewed until the final grades are assigned.

**COMPENSATION:**

The participants will not be compensated for participating in this study. However, participation in the project will require no monetary cost to you. An envelope is provided for return of your response to the investigator.

**CONFIDENTIALITY:**

Even though your name will appear on the instruments, it will be deleted in the published data. All written materials and consent forms will be stored in a locked file in the researcher's home. All online materials will be stored on a secure server. Your response will only appear in statistical data summaries. All materials will be destroyed at the completion of the research.

**RIGHT TO WITHDRAW:**

You are under no obligation to participate in this study. You are free to withdraw your consent to participate at any time.

**SUMMARY OF RESULTS:**

A summary of the results of this research will be supplied to you, at no cost, upon request.

**VOLUNTARY CONSENT:**

I have read the above statements and understand what is being requested of me. I also understand that my participation is voluntary and that I am free to withdraw my consent at any time, for any reason. On these terms, I certify that I am willing to participate in this research project.

I understand that should I have any further questions about my participation in this study, I may call Dr. Paul Richer, Chair of the Duquesne University Institutional Review Board (412-396-6326).

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Participant's Signature

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Date

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Researcher's Signature

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Date

## Appendix R

### Specific Information Regarding the Participants of the Study



## Specific Information Regarding the Participants of the Study

Participant Number	Background Information
1	The first participant is a female pursuing her first Master's Degree, which is in Instructional Technology from the school of Education. She was interested in learning about classroom/workshop management, teaching and training techniques, and was interested in learning about "anything and everything." She has between 1 and 3 years of teaching experience, and is currently teaching computers at K-6 level. She indicated that she had used stories or case studies in her teaching. She also had experience in online learning, where the format included asynchronous and synchronous discussions, correspondence, and video conferences, with WebCT as the course management system. She described her ratio of online learning to classroom learning as 50% online and 50% in the classroom, and she considered her experiences with online courses about the same as an "in classroom" course.
2	The second participant is a male pursuing his first Master's degree as well, which is a Master's in Secondary Education. He was interested in learning about teaching and training techniques, and has had no teaching experience. He plans on doing his training, however, at the 7-12 level. He indicated that he never used stories or case studies in his teaching, and that he also never had taken an online course.
3	The third participant is a female who is wanted to learn more about teaching and training techniques and is pursuing her first Master's Degree in Instructional Technology, offered through the Education Department. She has 4-9 years experience in teaching computers, library, and media at the K-6 level. She has also used stories or case studies in her teaching. She has had the following experiences in taking online courses: asynchronous and synchronous discussions, and video conferencing, and experience with both the Blackboard and WebCT course management systems. She describes the ratio of online learning to classroom learning as 10% online and 90% in classroom, and has described her previous experiences in online courses as about the same as an "in classroom" course.
4	The forth participant is a male who wants to learn more about teaching and training techniques and is also pursuing his first Master's Degree in Instructional Technology, offered through the Education Department. He has 4-9 years experience teaching subjects such as English and TV production and video at a post secondary level. He has also used stories or case studies in his teaching. He has experienced both asynchronous and synchronous discussions, as well as videoconferencing in an online environment. He has also experienced taking classes via correspondence. He has had experience with both Blackboard and WebCT course management systems. He describes the ratio of online learning to classroom learning as 50% online and 50% in the classroom, and describes his experience in the online course as about the same as an "in classroom" course.
5	The fifth participant is a female who wanted to learn more about classroom and workshop management, as well as teaching and training techniques. She is pursuing her first Master's Degree in Education. She has between 1 and 3 years teaching experience in subjects such as English, Science, Reading, and Religion at a K-6 level. She has used stories or case studies in her teaching. Her online experiences include asynchronous discussions via the Blackboard course management system. She describes the ratio of online learning to classroom learning as 10% online to 90% in the classroom, and indicated that her experience with an online course was not as good as an "in classroom" course.
6	The sixth participant is a male who wanted to learn more about teaching and training techniques. He is pursuing his first Master's Degree in Instructional Technology, offered through the Education department. He has had more than 20 years of experience teaching computers, multimedia, world wide web based applications, and video at the post secondary level. He has also used stories or case studies in his teaching. He took part in asynchronous and synchronous discussions, as well as video conferences in both the Blackboard and WebCT course management systems. He has also had a correspondence format with his online courses. He describes his ratio of learning to classroom learning as 50% online and 50% in the classroom. He also describes his experience in the online course as about the same as an "in classroom" course.

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|-------|--|
| 7     | The seventh participant is a female who wanted to learn more about classroom and workshop management and who wanted to learn more about teaching and training techniques. She is pursuing her first Master's Degree in Instructional Technology, offered through the Education Department. She has had between 1 and 3 years teaching experience teaching subjects such as Math, English, and Special Education at a K-6 level. She has also used stories or case studies in her teaching. She has experienced both asynchronous and synchronous discussions in the Blackboard and WebCT course management systems. She describes the ratio of online learning to classroom learning as 50% online and 50% in the classroom, and describes her experiences in previous online courses as both better than an "in classroom" course and about the same as an "in classroom" course. |
| <hr/> |  |
| 8     | The eight participant is a female who was interested in learning more about teaching and training techniques. She was currently pursuing her first Master's Degree in Instructional Technology, offered via the Education Department. She has between 1 and 3 years of teaching experience with Math, English, Science, History/Social Studies, and Reading at a K-6 level. She has also used stories or case studies in her teaching. She has taken part in both asynchronous and synchronous discussions in course management systems such as Blackboard and WebCT. She describes her ratio of online learning to classroom learning as 40% online and 60% in the classroom, and describes her previous online learning experience as about the same as an "in classroom" course.  |
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